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NEW YORK SOCIETY OF ORTHODONTISTS

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IT IS traditional with many professional societies that the outgoing president be given an opportunity to speak his mind in relation to any problems or deficiencies or ambitions which he might deem worthy of consideration by the members of his organization. As you all must be fully aware we, as a people, are living in an age of political and social upheaval, attended with the usual human weaknesses which are always brought to the surface during such phases of social instability. Under such circumstances we, as individuals of an important profession, have our special duties to perform in order that civilization shall not eventually be destroyed. Likewise, we, as an organization, one we might consider still in its infancy in respect to other professional organizations, also have our collective responsibilities to the nation and to society in general. We may, if we do not give the matter considerable thought, satisfy ourselves with the impression that the influences of our organization are circumscribed and limited to our own immediate experience or sphere. Such a conception would be unworthy of us because, as any thoughtful person can readily perceive, we are engaged in an endeavor to improve the physical and mental development of the children who are to become future influential citizens of this great democracy. Little did I realize many years ago when correcting the dentofacial inharmonies of a young bright-eyed lad that I should live to see this patient win his seat in the United States Senate after a hard fought battle against political corruption and almost immediately begin to wield an influence which is clearly dedicated to the preservation of

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democracy, and to the future upbuilding of a still greater democracy where all men shall have opportunity commensurate with ability.

Each one of you also has been influential in the lives of the children you have taken under your care. Little do any of us realize the potentialities of these youngsters, and little do we realize the blessings that we, as orthodontists, should be able to bestow upon them.

If you have given little thought to this phase of your services, I am going to suggest that you secure and read, not once but many times, an editorial, "Tribute to Orthodontics," in the November, 1938, issue of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY. After reading this last editorial written by one of America's most famous dentists, the late C. N. Johnson, you cannot fail to have a higher respect for the profession which you serve. It will have the effect of making you an even more sincere and capable orthodontist, one proud of his profession and jealous that its high purpose shall be ever maintained. At the same time, you will become more interested in the problem of public education to the end that the people themselves shall be taught to realize the importance to future generations of the benefits of dentofacial orthopedics.

When I look at the earnest faces of those assembled here, and consider what may be expected of you in future years, my heart is filled with envy for those of you who have many years yet to serve. It is filled with hope that, through your strength and your determination, nothing shall ever transpire to lower the standards of our profession. I entertain a hope and a confidence in the younger men that they will so conduct themselves that progress shall not pause, but that it shall be continuous, and that the many fields of investigation still untilled shall be cultivated by methods of research for the benefit of the myriads of children who are yet to receive the advantages of your efforts. And to further strengthen my belief in your ability and in the sincerity of your purpose, I am going to refer to my own experience throughout the long years that it has been my good fortune to serve this profession. Let your imagination journey back with my memory to the early days of orthodontics and visualize the type of men who laid the first deep foundations of our profession and extract from them the earnestness of their unselfish endeavors. Twenty-eight years ago it was my privilege to serve as President of the American Society of Orthodontists. You well may imagine that the organization at that time was small. I think the membership from the whole nation was far less than the present membership of our New York Society! It was composed almost wholly of recent graduates of the Angle School of Orthodontia, many of them pioneers sent out from the first three or four classes. There was one happy feature about this organization during its early days. We were not only an organization of orthodontists, we were a company of friends. We worked together making every sacrifice for the advancement of our profession. It is true that we made mistakes, but our purpose was high, and our progress was steady. I think that the influence of those pioneer workers is still having its beneficent effect upon the course of our development.

And now after those twenty-eight years I have been privileged to become your president and to learn, to my utmost satisfaction, that among the men

who have worked with me in the preparation of our programs and in the general affairs of the association I have found as fully competent men as we had during those earlier years of our existence. The reason I have made this reference is that I wish to pay a tribute to the officers and the committees which have served me so loyally. By their actions and loyalty, and by the true value of their advice, they have won my utmost respect and confidence. When I accepted the presidency of this society it was with reluctance, only to reach that point where I relinquish with considerable regret.

You may perhaps infer from the tone of my remarks so far that I place great emphasis upon individual character. In fact, I do lay stress upon the idea that every profession is great according to the fundamental character of its individual members. It is especially essential in our profession that every man be endowed with a desire to serve and that his service shall be the best that he is capable of rendering. In order to give this service he must aspire to attain the highest value in educational standards that it is possible for him to acquire; at the same time he must encourage others who anticipate giving their lives to this service that they too may seek not the quickest and easiest, but the best methods of education. If men give their minds to the idea of service, then we may feel quite sure there will be no over-weening anxiety to give that service too quickly, but that they will seek and pursue the course that although it may be long, in the final analysis will prove to be the best.

We must develop among ourselves, and instill into the minds of those who join us in future years, a philosophy which will insure the high standards which those of our friends, who no longer being with us, would wish to see developed—friends whose lives and whose endeavors charted the course that will, if continued, insure a triumphant future. For only by the development of such right philosophy shall we attain the calm composure of an educated profession.

ORTHODONTIC PROGNOSIS: EVALUATION OF ROUTINE DENTOMEDICAL EXAMINATIONS TO DETERMINE "GOOD AND POOR RISKS"*

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IT IS generally conceived that the success of orthodontic therapy depends not only on the digital skill of the operator but also on a thorough knowledge of the mechanical principles of treatment and of the biologic laws which form a common basis of dental and medical practice. A failure to recognize and apply some of these fundamentals may lead to undesired results and render the prognosis unfavorable. To complicate the problem further it must be admitted that the etiology of a large number of tissue changes in the paradentium is only partially understood. Probably for this reason it happened that a prominent member of your profession stated more than ten years ago that the results in a certain percentage of his cases were not as favorable as desired because the patients had been originally, as he termed it, "poor risks." This alibi may be perfectly legitimate; however, it should be remembered that cases may still be risky even if they are "good risks."

If we consider the definition of the word "risk," we realize that it means a chance of encountering harm or peril; it means hazard or danger, as in "the risk of drowning."† In relation to orthodontic therapy or prognosis the word "risk" implies that we are uncertain, to say the least, as to the efficacy of many therapeutic methods and the use of this term by orthodontists is an admission that certain fundamentals are not yet understood. Many obscure factors (frequently of a biologic nature) may interfere with local therapy so that the effects of mechanical appliances are not those that were planned and desired.

During the past few decades, orthodontic science has progressed largely through improvement of mechanical appliances for the correction of dentofacial anomalies. Little progress has been made in discovering etiological factors responsible for early malposition of teeth or biologic factors affecting the tissue unfavorably during orthodontic movement of the teeth.

When I appeared before your society three years ago in New York, I reported[4] that a large percentage of orthodontic patients who had marked root resorptions were found to have coexistent systemic disturbances. In another group of patients who also had root resorptions but never received orthodontic treatment because of a favorable occlusal relationship, about the same frequency of systemic disturbances was found. Emphasis was placed on the fact

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†Funk-Wagnalls New Standard Dictionary of the English Language.

that these root resorptions had been found only in coexistence with systemic disturbances, and that as yet no scientific proof had been furnished that they were the result of the systemic disturbances.

Since our last report, clinical experience has confirmed the original findings, and the frequency with which systemic disturbances can be found in orthodontic practice has been commented on by many practitioners. Therefore I feel that the time has come to go further and see which systemic disturbances are most frequently found in a group of clinic patients applying for orthodontic treatment and whether there is any reason to believe that they are related to the occurrence of dentofacial anomalies and pathologic tissue changes, such as gingival irritation, deficient bone replacement, and root resorptions. A better understanding of the many difficulties these systemic disturbances may cause will probably eliminate some of the risk from orthodontic practice. Perhaps then it would be possible to forget completely that there is a risk, and treatment could be discussed as offering a favorable prognosis.

CLINICAL AND LABORATORY INVESTIGATIONS

In investigating the factors that may render the orthodontic prognosis unfavorable, a routine procedure for a thorough dentomedical examination of all orthodontic applicants at the Dental College of the University of California was introduced in July, 1934. This plan, which has proved to be very successful, includes a number of studies conducted by the Divisions of Dental Medicine and Orthodontics.

1. *Medical History and Physical Examination.*—As in medical practice it was felt that a complete physical examination of the patient and a personal and family medical history would aid considerably in determining the early etiological background of the dentofacial anomaly or an underlying inherited tendency. It is my belief that many failures in orthodontic practice could be prevented if every orthodontist, through cooperative efforts with his medical colleagues, were to establish early in the life of his young patient the factors that are causing the malposition of teeth or the dentofacial anomaly. Only too often do we find that the orthodontic practitioner is concerned only with his mechanical problems. He forgets that during this formative period nature is his greatest aid and that an understanding of the biologic processes which are governed by complicated endogenous and exogenous factors, will help him considerably in solving his mechanical worries.

Most orthodontic problems must be considered problems of growth and development; however, the many factors influencing these processes are only partly understood. I do not believe that we will err greatly if, in an attempt to investigate a possible relationship between systemic and oral disturbances, we search for early metabolic disorders, disturbances originating from the digestive tract, infectious diseases, endocrinopathies, and hereditary diseases.

2. *Laboratory Tests.*—To supplement these physical examinations routine laboratory examinations were made which included:

a. Determination of the basal metabolic rate.

b. Differential blood count.

c. Urinalysis.

3. *Determination of Skeletal Maturation.*—The fact that advanced or retarded skeletal maturation may be related to malformation of maxillary bone structure with malposition of teeth and advanced or retarded eruption, encouraged us to include physiologic bone age determinations of all children. The recent work of Todd[11] provided standards for comparative studies. Height and weight were recorded routinely.

4. *Dental Examinations.*—These included gnathostatic and photostatic reproductions, a check on home care, hygiene of the mouth and condition of oral mucosa, a thorough check of every tooth surface to determine Boedecker's life caries index[5] and in subsequent examinations, the caries frequency index.

5. *Roentgenographic Survey.*—Roentgenograms of the complete denture were made, before treatment was begun, for a diagnosis of the original bone formation and subsequently every six months to check, in detail, changes in the denture and in paradental bone structure.

6. *Nutritional Histories.*—An essential part of this group investigation was the study of nutritional habits, both past and present. Special attention was given to intake of carbohydrate, minerals, and vitamins.*

RESULTS OF EXAMINATIONS

Since July 1, 1934, 145 orthodontic applicants have been examined physically. The various abnormalities found were classified into local and general pathologic conditions. Among those of a local character and of most frequent occurrence were nasal obstructions; others were inguinal hernia, infections of cervical lymph nodes, sinusitis, myopia, osteomyelitis, and cleft palate. Even though one or another of these local infections or disturbances might have been responsible for the malposition of teeth, a direct relationship must be questioned. Among the systemic conditions which were found in sixty-five patients (44.8 per cent) it was interesting to observe that circulatory disturbances, endocrinopathies, mild forms of rachitis, and allergic diseases took a leading part (Table I). Under circulatory disturbances were grouped individuals with heart diseases, unstable blood pressure, and quick vascular response, with a total of twelve cases, which equals 18.50 per cent of the sixty-five individuals with systemic disturbances. The most frequently occurring endocrinopathy was hypothyroidism in thirteen cases (20.00 per cent); in eight cases (12.33 per cent) pituitary dysfunctions were represented; diabetes was found in only one instance. Therefore in 33.86 per cent (i.e., one-third) of the patients with systemic disturbances at least one of the these three endocrine dysfunctions was present. Mild rickets was found in eleven patients (16.92 per cent), the same number of instances in which asthma and other allergic tendencies occurred. Respiratory infections, poliomyelitis, nephritis, and syphilis were represented by only a single case each; their presence therefore seems to be less significant.

Nutritional deficiencies which might have created growth defects are not included in this table; they will be discussed separately.†

In a literary survey recently completed by Kaps,[10] it was found that a large number of authors who reported etiological factors of dentofacial anomalies

*To be presented separately by Dr. N. Simmonds, in charge of these examinations.
†By Dr. N. Simmonds, University of California.

held one or another endocrinopathy responsible (Table II). In addition to the ones mentioned in Table I, they cited hyperthyroidism, gonadal, thymus, and parathyroid dysfunctions. So far, the viewpoints expressed by some of these authors with regard to parathyroid, thymus, and gonadal dysfunction appear to be primarily of a hypothetic nature and lack definite scientific proof.

TABLE I

SYSTEMIC DISTURBANCES FOUND IN 145 ORTHODONTIC APPLICANTS BY ROUTINE PHYSICAL EXAMINATION

SYSTEMIC DISTURBANCES	NO. OF INDIVIDUALS	PERCENTAGE OF INDIVIDUALS
Circulatory disturbances	12	18.50
Hypothyroidism	13	20.00
Pituitary dysfunction	8	12.33
Diabetes	1	1.53
Mild rickets	11	16.92
Allergy and asthma	11	16.92
Respiratory infection	6	9.20
Poliomyelitis	1	1.53
Nephritis	1	1.53
Syphilis	1	1.53
Total	65	99.99
Negative	80	

Next in frequency, Kaps found vitamin and mineral deficiencies and rickets were stated in the literature to be of etiological importance.

By comparing these statements of former investigators, which can be accepted only with certain reservations, with the results of the above 145 physical examinations it appears that in the future special attention must be paid to general circulatory disturbances, thyroid and pituitary dysfunctions, early rickets, and allergic diseases as possible causative factors in the etiology of dentofacial abnormalities. In turn these diseases may be responsible for a number of complications which may arise in the course of treatment.

With the exception of a few cases of secondary anemia, the differential blood counts and urinalyses of these 145 patients were within normal limits. However, routine determination of the basal metabolic rate revealed (Table III) that forty of 142 patients (28.17 per cent) had definitely low readings which in many instances were accompanied by hypothyroidism or nutritional deficiencies. In 102 patients (71.83 per cent), the basal metabolism was found to be within normal limits.

The determination of the physiologic bone age by wrist roentgenograms provided a very interesting insight into the degree of skeletal maturation of forty-two patients.

In 33.33 per cent of the subjects examined, i.e., exactly one-third, the physiologic bone age was definitely retarded and advanced in 19.05 per cent. Altogether, in 52.38 per cent the physiologic bone age did not correspond to the standards established by Todd.[11] Deviations of two years or less were not recorded in Table IV as retarded or advanced bone age.

Since this group of forty-two patients was considered too small to merit making deductions, it was decided to determine the physiologic bone age of forty-

TABLE II

SUSPECTED ETIOLOGICAL FACTORS OF DENTOFACIAL ANOMALIES (KAPS)

AUTHOR	YEAR OF PUBLICATION	ENDOCRINE IMBALANCE	HYPOTHYROIDISM	HYPERTHYROIDISM	GONADAL DYSFUNCTION	PARATHYROID DYSFUNCTION	THYMUS DYSFUNCTION	VITAMIN DEFICIENCIES	MINERAL DEFICIENCIES	RICKETS	TOXIC INFECTIONS	SCARLET FEVER	CHICKENPOX	MEASLES	ENVIRONMENTAL INFLUENCE	IMITATION	MENTAL ATTITUDES	RACIAL MIXTURE	NERVE DYSFUNCTION	FAULTY BLOOD SUPPLY	GRITTING TEETH	INTRAUTERINE PRESSURE
Bery	1931	+	+	+		+	+	+	+	+	+	+	+	+	+							
Hale	1932		+					+	+													
Dewey	1932							+	+	+												
Reynolds	1933			+		+	+	+														
Hatfield	1933			+				+	+							+						
Brash	1933			+				+	+							+						
Strang	1933	+	+														+	+				+
Griuch	1935							+	+		+								+			
Leader	1934	+										+	+	+								+
Herbst	1934	+	+		+															+		
Marinus & Rond	1934		+	+			+	+	+	+	+								+	+	+	
Kohn and Todd	1934			+						+									+			
Scott	1935									+		+	+	+		+					+	+
Woodbury	1935							+	+	+												
Priel	1935							+	+	+												
Champion	1935	+						+	+	+		+	+	+				+				
Sved and Jansen	1935	+	+					+	+		+							+	+			
McCoy	1922	+	+					+	+													+
Lischer	1912							+	+	+								+				
Totals		7	7	6	1	2	3	14	13	9	4	4	4	4	1	3	1	4	4	2	2	4

TABLE III

DETERMINATION OF BASAL METABOLIC RATE OF 142 ORTHODONTIC APPLICANTS

BASAL METABOLIC RATE	NUMBER OF INDIVIDUALS	PERCENTAGE OF INDIVIDUALS
Normal	102	71.83
Low	40	28.17
High	--	--
Total	142	100.00

TABLE IV

DETERMINATION OF PHYSIOLOGIC BONE AGE (HAND) OF 42 ORTHODONTIC APPLICANTS

BONE AGE	NO. OF INDIVIDUALS	PERCENTAGE OF INDIVIDUALS
Normal	20	47.62
Retarded	14	33.33
Advanced	8	19.05
Total	42	100.00

nine additional children who were under investigation by the Institute of Child Welfare at Berkeley.*

It soon was recognized that although the determination of the physiologic bone age gave a general indication of the stage of skeletal maturation, yet it was questioned whether such a determination would permit any conclusions as to the stage of development of the maxilla. For this reason a comparison was made of the physiologic bone age and the eruption time of the teeth.

Todd's standards were used for the determination of the physiologic bone age, for the time of tooth eruption the tables of Bean[1-3] and Cattell[6, 7] were used. In using the latter tables it had to be realized that even though many investigators attempted to standardize the normal time of tooth eruption using criteria based on clinical or roentgenographic evidence, it was again found that all time ranges for normal tooth eruption were not sufficiently accurate to be of true scientific assistance. With this handicap in mind, ninety-one children were examined as to their physiologic bone age and time of tooth eruption.

Since gnathostatic and photostatic reproductions were not available of the second group of eighty-nine children, Angle's classification of malocclusion for

TABLE V

COMPARISON OF SKELETAL MATURATION (HAND) AND TOOTH ERUPTION

OCCLUSION		NO. OF CASES	1 B. A. NORMAL T. E. NORMAL	2 B. A. NORMAL T. E. RET.	3 B. A. NORMAL T. E. ADV.	4 B. A. RET. T. E. NORMAL	5 B. A. RET. T. E. RET.	6 B. A. RET. T. E. ADV.	7 B. A. ADV. T. E. NORMAL	8 B. A. ADV. T. E. RET.	9 B. A. ADV. T. E. ADV.
Normal		10	4	1	1	1	1	--	1	--	1
Class I		43	1	6	6	--	4	6	4	6	10
Class II		31	5	--	4	4	1	1	3	3	10
Class III		7	1	--	--	--	1	--	--	1	4
Total	No. of cases	91	11	7	11	5	7	7	8	10	25
	Percentages	100.0	12.1	7.7	12.1	5.5	7.7	7.7	8.8	11.0	27.5

B. A. = Bone Age
T. E. = Tooth Eruption Time

*The records of these forty-nine patients were placed at our disposal through the courtesy of Dr. Nancy Bailey.

all ninety-one was tentatively used. The stages of eruption time and physiologic bone age were noted for all groups of malocclusion thus giving nine categories corresponding to columns 1 to 9 in Table V. It can be noted from this table that only ten of ninety-one individuals had normal occlusion; forty-three had Class I malocclusion; thirty-one, Class II; and seven, Class III. In column 1 was entered the number of individuals who had both a normal physiologic bone age and a normal time of tooth eruption (12.1 per cent). In columns 2 to 9 the number of subjects with various combinations of conditions was entered; these totaled 87.9 per cent (the sum of percentages of columns 2 to 9, bottom row).

If we assume that the standards established by Todd, Bean, and Cattell are only relatively accurate and represent a cross section of the population, the total percentage (87.9 per cent) of individuals with either or both retarded or advanced bone age and time of tooth eruption is certainly a surprising proportion, demonstrating convincingly that the majority of our dentofacial anomalies are problems of disturbed growth and development. Even if these figures were to be changed slightly by additional investigations they still will indicate the great significance of systemic factors in disturbances of the growth processes with which the orthodontist is concerned.

A closer analysis of the data of Table V which are rearranged in Table VI, reveals that instances of advanced time of tooth eruption and advanced bone age occur more frequently than normal or retarded conditions.

TABLE VI

TOOTH ERUPTION AND PHYSIOLOGIC BONE AGE OF 91 INDIVIDUALS

	TOOTH ERUPTION TIME		BONE AGE	
	CASES	PERCENTAGE	CASES	PERCENTAGE
Normal	24	26.37	29	31.86
Retarded	24	26.37	19	20.88
Advanced	43	47.25	43	47.25

Since these observations may be of importance in the interpretation of the etiological factors of the dentofacial anomalies in these ninety-one patients the above values were again retabulated in Table VII according to normal occlusion and Classes I, II, and III of malocclusion.

The values in Table VII offer most interesting observations. It can be noted that all classes of malocclusion are more frequently accompanied by advanced bone age and early eruption of teeth, than by retarded bone age and delay in time of tooth eruption, as was originally suspected.

It seems to be of significance that the largest number of cases of advanced time of tooth eruption (57.14 per cent) and advanced bone age (71.44 per cent) are found in Class III malocclusion. These observations confirm partly the conclusions of Howard[8] who deserves credit for the first description of the acromegaloid type of malocclusion due to hyperfunction of the anterior lobe of the pituitary gland, accompanied by an early closure of the epiphyses (advanced bone age). However, it is to be noted that an advanced bone age is found also in cases of Class I (46.51 per cent) and Class II (51.61 per cent) malocclusion which seems to be a significant finding.

TABLE VII

TOOTH ERUPTION TIME AND PHYSIOLOGIC BONE AGE OF 91 INDIVIDUALS CLASSIFIED ACCORDING TO THE OCCLUSION OF THE TEETH

	TOTAL NUMBER OF CASES		TOOTH ERUPTION TIME		BONE AGE	
			CASES	PERCENTAGE	CASES	PERCENTAGE
Normal occlusion	10	Normal	6	60	6	60
		Retarded	2	20	2	20
		Advanced	2	20	2	20
Class I Malocclusion	43	Normal	5	11.62	13	30.23
		Retarded	16	37.20	10	23.25
		Advanced	22	51.17	20	46.51
Class II Malocclusion	31	Normal	12	38.70	9	29.03
		Retarded	4	12.90	6	19.35
		Advanced	15	48.39	16	51.61
Class III Malocclusion	7	Normal	1	14.28	1	14.28
		Retarded	2	28.57	1	14.28
		Advanced	4	57.14	5	71.44

Frequent reports in the literature and the fact that in these investigations twenty-four individuals manifested definitely retarded tooth eruption (Table VI) led to an investigation of possible etiologic factors in order to determine whether this finding could be used as an indication of some abnormal systemic condition. As we know, the formation and eruption of all permanent teeth is normally completed during the adolescent period, possibly with the exception of the third molars. However, a delay in eruption time until late in life sometimes occurs which suggests that the forces of eruption in such cases have been inhibited in varying degrees by endogenous factors or perhaps by systemic or constitutional diseases, dietary deficiencies, metabolic disturbances, and inherited tendencies.

Jones[9] recently surveyed the international literature as part of his investigation of the etiological factors of delayed tooth eruption and partial anodontia. He found (Table VIII) that endocrinopathies took the leading

TABLE VIII

ETIOLOGICAL FACTORS OF DELAYED TOOTH ERUPTION (JONES)

	ETIOLOGIC FACTORS	NO. OF AUTHORS	PERCENTAGE	GROUP PERCENTAGE
Endocrinopathy	Hypothyroidism	17	43.59	
	Hypopituitarism	1	2.56	
	Hyperpituitarism	1	2.56	
	Low thymus activity	1	2.56	
Total		20		51.28
Developmental disturbance	Biologic	1	2.56	
	Embryologic	2	5.13	
	Ectodermal dysplasia	2	5.13	
	Cerebral meningeal lesions	2	5.13	
Total		7		17.95
Diet deficiencies	Lack of vitamins	1	2.56	
	Rickets	4	10.27	
Total		5		12.83
	Tuberculosis	1	2.56	
	Congenital syphilis	6	15.39	
Total		7		17.94
Total		39	100.00	100.00

place among the etiological factors of delayed tooth eruption as expressed by previous authors (51.28 per cent of accumulated reports). Among these, hypothyroidism ranked predominant to the extent of 43.59 per cent of the total of opinions expressed. Developmental disturbances were responsible for the next highest group percentage (17.95 per cent) while congenital syphilis (15.39 per cent) and rickets (10.27 per cent) as individual diseases also appear to be significant. The total percentage of the three outstanding systemic disturbances, hypothyroidism, congenital syphilis, and rickets, amounts to the significant figure of 69.22 per cent while the other diseases found with delayed eruption appear to be of less importance.

The dental examinations of the first 142 individuals (page 613) revealed that the eruption of permanent teeth was definitely delayed in twenty-four instances. When these patients were tabulated according to systemic disturbances, it was noted that hypothyroidism and rickets were predominant.

The most extreme form of delayed tooth eruption in this series of investigations was found in coexistence with a rare generalized disturbance called craniocleidodysostosis, the etiology of which is unknown. This congenital condition is characterized by a deficient and defective ossification of the clavicles and bones of the skull and face. From a dental standpoint it presents one of the most startling problems, namely that the eruption of all permanent teeth, even though present in the alveolar jaws, is greatly delayed and sometimes completely inhibited throughout life.

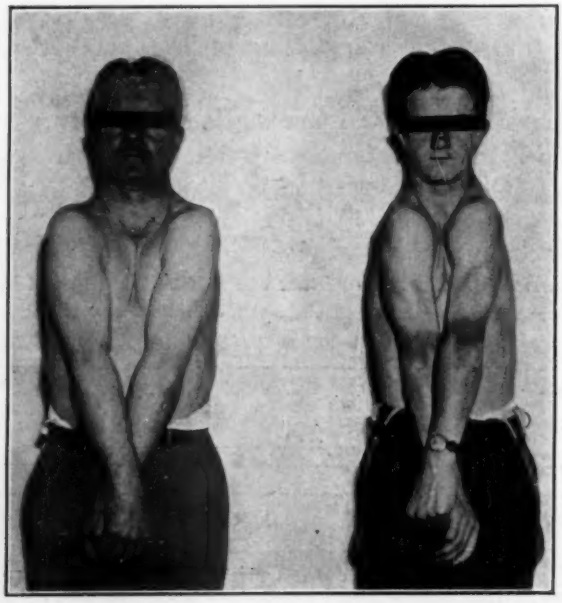

Fig. 1.—Craniocleidodysostosis in father and son with severely delayed tooth eruption. Mobility of shoulders is due to partial absence of clavicles.

Fig. 1 demonstrates two cases of craniocleidodysostosis in a father and son (42 and 18 years of age). The extreme mobility of their shoulders and arms is due to the bilateral absence of the medial two-thirds of the clavicles. Their skulls appear square shaped with indentations of the forehead due to

lack of closure of the fontanelles. The maxillae also appear definitely underdeveloped, especially in the son (Fig. 2). The denture casts which were made of the son when he was 14 years of age show the lack of eruption of most permanent teeth (Fig. 3).

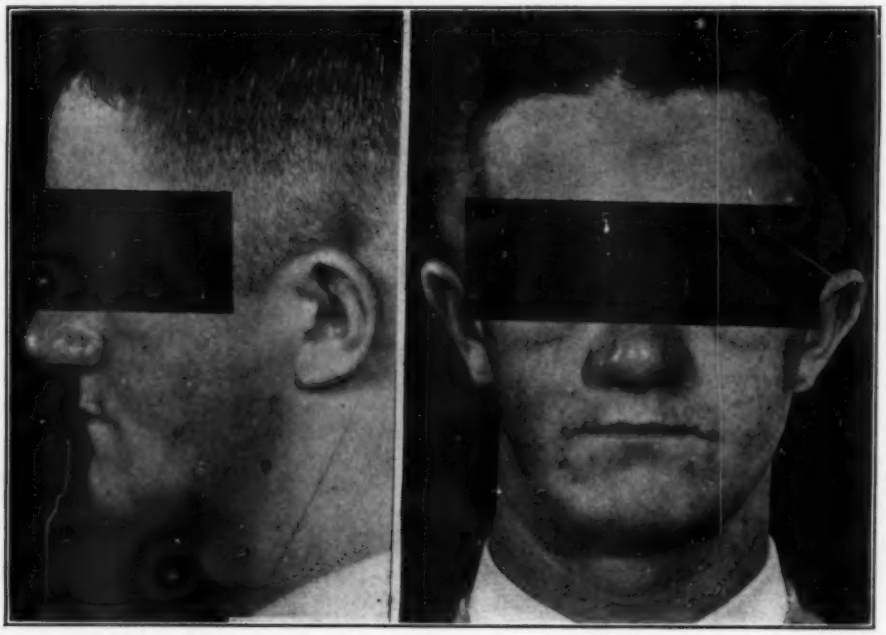

Fig. 2.—Craniocleidodysostosis with square shaped skull, underdeveloped maxilla. Indentation of forehead is due to lack of closure of fontanelles.

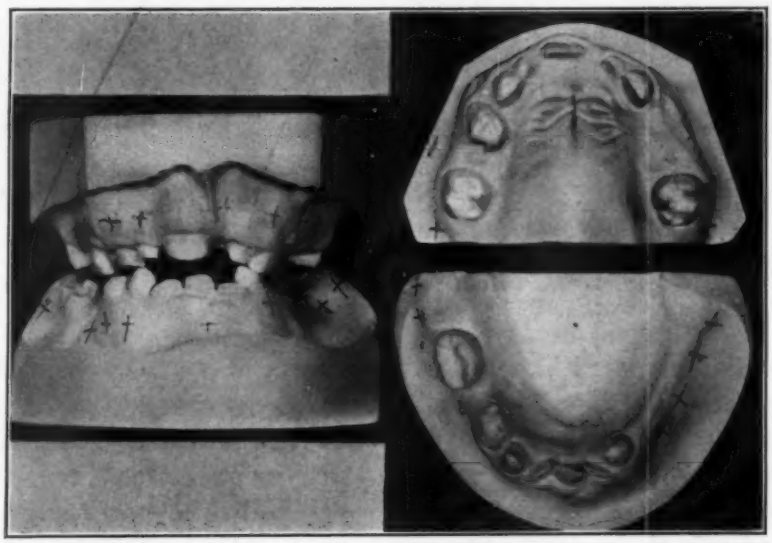

Fig. 3.—Casts of dentures of individual of Fig. 2 at 14 years.

The roentgenograms of these dentures are given in Fig. 4 and indicate the severe degree of delayed tooth eruption combined with abnormal position of the retained teeth. During the last five years of observation the clinical aspect has not changed at all; subsequent roentgenograms (Fig. 5), which have

been taken every year, do not show any tendency on the part of the unerupted teeth to make their appearance.*

As such an extreme form of delayed eruption of permanent teeth always can be demonstrated in coexistence with this congenital disturbance, the question arises as to whether a delay of two or more years in the time of eruption of only a few permanent teeth (as a mitigated form of delayed eruption of permanent teeth) is the expression of the effect of certain endogenous factors which heretofore have not been recognized, and which might influence unfavorably the physical well-being of the patient, as well as the position and alignment of the teeth and development of the jaws.

Fig. 4.

Fig. 5.

Fig. 4.—Dental roentgenograms of individual of Fig. 2 at 14 years.
Fig. 5.—Dental roentgenograms of individual of Fig. 2 at 18 years.

In my report[4] read before the American Society of Orthodontists in New York, emphasis was placed on the clinical observation that a large percentage of patients suffering from multiple root resorptions, whether previously treated orthodontically or not, also had certain endocrinopathies or other systemic disturbances. From the standpoint of normal and pathologic bone formation it was noted that the majority of patients with root resorption presented roentgenographically atrophic or dystrophic conditions of the maxillary bones.

Because of the apparent significance and importance for orthodontic therapy and prognosis these investigations were continued. Roentgenograms

*The early extraction of all deciduous teeth in such a condition is contraindicated because it will not facilitate or promote an earlier eruption of the permanent teeth.

of a group of seventy-two orthodontic applicants were taken before the beginning of orthodontic treatment and repeated half a year later. A summary of the findings is given in Table IX.

TABLE IX

FREQUENCY OF ROOT RESORPTION IN SEVENTY-TWO PATIENTS BEFORE AND AFTER SIX MONTHS OF ORTHODONTIC TREATMENT

ROOT RESORPTIONS			
BEFORE ORTHODONTIC TREATMENT		AFTER SIX MONTHS OF ORTHODONTIC TREATMENT	
NO. OF INDIVIDUALS	PERCENTAGE OF INDIVIDUALS	NO. OF INDIVIDUALS	PERCENTAGE OF INDIVIDUALS
23	32.0	23	32.0
		30	41.6
Total	32.0	53	73.6

Attention must be called to the fact that 23, i.e., 32.0 per cent, of the seventy-two individuals had marked root resorptions before orthodontic treatment was begun. In the course of therapy this resorptive process apparently continued and was accelerated by the application of mechanical force. Within six months after the beginning of treatment an additional thirty individuals developed slight to marked root resorptions, making a surprising total of 73.6 per cent of individuals with root resorption at the end of the first half year.

TABLE X

FREQUENCY OF ROOT RESORPTIONS IN SEVENTY-TWO PATIENTS WITH NORMAL AND PATHOLOGIC BONE FORMATION

BONE STRUCTURE OF JAWS			ROOT RESORPTION AFTER 6 MONTHS OF ORTHODONTIC TREATMENT	
	NO. OF INDIVIDUALS	PERCENTAGE OF INDIVIDUALS	NO. OF INDIVIDUALS	PERCENTAGE OF INDIVIDUALS
Normal	23	31.9	10	43.5
Osteoporosis	49	63.1	43	87.7
Total	72	100	53	73.6

If the fifty-three individuals with root resorptions are studied in relation to the roentgenographic appearance of maxillary bone structure (i.e., normal or porotic bone structure) it is found (Table X) that on a percentage basis root resorptions occurred in twice as many patients with osteoporotic jaws as in patients with normal bone structure (87.75 per cent and 43.5 per cent respectively). These figures confirm our previous observation that many more patients with osteoporotic maxillae develop root resorptions than those with normal bone structure. From a prognostic standpoint, therefore, it must be concluded that patients with osteoporotic lesions or root resorptions before the beginning of orthodontic therapy are definitely "poor risks."

As has been stated previously, thorough dental examinations were made to establish the life caries index, as first suggested by Boedecker.[5] Subsequent determinations of the caries frequency index (Boedecker's Caries Susceptibility Index) were made to determine whether the patient's tendency to caries had changed during treatment, as such a tendency has been frequently stated

to result from the presence of orthodontic appliances. These observations are not complete as yet. However, they will aid greatly in answering the question as to what measures must be taken in order to reduce the incidence of dental caries in orthodontic practice.

COMMENT AND CONCLUSION

The determination of the orthodontic prognosis based on a critical analysis of mechanical limitations and biologic fundamentals has found very little attention in the past. It has been common practice to speak of prospective orthodontic patients as "good" and "poor risks," forgetting frequently that many of these so-called poor risks cannot only be made good risks but that sometimes they also can be converted into patients with a favorable orthodontic prognosis. It should be remembered that it is not always the mechanical appliance or the type and speed of tooth movement which is alone responsible for the outcome of orthodontic treatment but that certain biologic processes have been proved to be essential contributing factors which also can determine the outcome of orthodontic therapy. Success or failure depends on an understanding of these factors, and it will become necessary for orthodontists of the future to promote more than ever the investigation of these momentous forces which are a great handicap in your therapy. It is not necessary to become physicians to understand some of these heretofore obscure etiological influences; however, studies by each practitioner should be concentrated along definite lines of biologic science.

Dentistry in the past, and orthodontics in particular, has been a profession which dealt only with engineering problems in the large field of biologic science. Let us all endeavor to change this commonly accepted point of view and try to arrive at a high standard of dental education and professional endeavor guided by a sound dentomedical approach.

In order to determine as accurately as possible the prognosis of the therapeutic measures, the described clinical and laboratory investigation presents an attempt to include in the study of an orthodontic applicant a complete physical examination and laboratory tests as well as the dental aspect and outline of treatment. The plan outlined has been followed by the University of California since 1934. The results of these studies may be summarized as follows:

1. The physical examinations of 145 orthodontic applicants revealed that sixty-five individuals (45 per cent) were suffering from various systemic diseases. Circulatory disturbances, endocrinopathies, rachitis, and allergic tendencies were outstanding. Among the endocrinopathies, hypothyroidism and pituitary dysfunctions were most frequently found.

2. Differential blood counts and urinalyses did not disclose any marked deviations from the normal, possibly with the exception of a few cases of secondary anemia.

3. Basal metabolic rate determinations were definitely low in 28.17 per cent of the patients, accompanied in most instances by hypothyroidism and nutritional deficiencies; 102 individuals (71.83 per cent) had normal readings.

4. The physiologic bone age was definitely retarded in fourteen (33.33 per cent) and advanced in eight (19.05 per cent) of forty-two individuals examined.

5. The eruption of permanent teeth was definitely delayed in twenty-four of 142 individuals examined. Early rachitis or hypothyroidism was found most frequently in coexistence.

6. A study of ninety-one children revealed that in 87.9 per cent either or both the physiologic bone age and time of tooth eruption deviated from established standards. Advanced time of tooth eruption and advanced bone age occurred more frequently than normal or retarded conditions.

7. A high frequency of advanced bone age was not only found in individuals of an acromegaloid type (Howard[8]) but also in patients with Classes I and II of malocclusion.

8. Definite root resorptions were found in twenty-three, i.e., 32.0 per cent, of seventy-two individuals before the beginning of orthodontic treatment. During the course of active tooth movement the frequency of root resorptions increased to the high figure of 73.6 per cent.

9. The occurrence of root resorptions was about one hundred per cent higher in patients with porotic maxillae than in those with normal bone; i.e., 87.7 per cent as against 43.5 per cent.

It must be admitted that the number of individuals examined is still far too small to permit generalized and far reaching conclusions; however, it becomes evident from these data that a large number of orthodontic patients are suffering from some systemic ailment at the time active tooth movement is begun. It is conceivable that in some of them systemic disturbances are etiologically responsible for the occurrence of the dentofacial anomaly, especially in view of the fact that skeletal maturation (physiologic bone age) and time of tooth eruption show definite deviation from established standards. Under such circumstances where our patients are found below par with respect to their physical health it appears to me of utmost importance that local oral therapy be accompanied by effective medical measures.

The time has passed when orthodontic treatment can be started without the aid of roentgen rays. It is generally recognized today that roentgenograms are a great aid in our diagnostic procedure and enable us to recognize the various types of pathologic bone formation in the maxilla, the changes due to marginal, apical, and periapical pathologic processes, and others which might influence greatly the course of orthodontic therapy. A thorough roentgenographic analysis of each individual case should form the basis of our endeavor to determine the prognosis of treatment. The early recognition of root resorptions, even before any orthodontic treatment is started, presents an important criterion of a very active osteoclastic or odontoclastic system which is governed by exogenous or endogenous factors influencing osseous and dental metabolism. If teeth are moved in patients under such obvious abnormal conditions, the prognosis must be considered unfavorable because additional mechanical stress will usually accelerate the resorption of dental and osseous structures, followed by deficient bone replacement which will not be adequate for the fixation of teeth in their new position.

At the present time the practical approach to evaluating the physical findings, laboratory tests, and roentgenographic appearance of dental and osseous structures rests with each operator's knowledge of these subjects. In the future it will be necessary for each orthodontist to train himself also along lines of biologic thinking rather than only along lines of mechanical movement of the teeth. This in turn will not only lead to a correction of a large number of physical defects but will simultaneously eliminate risks from orthodontic practice, whether they are good or poor risks.

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ANGLE CLASS III ?

Case Report

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THE patient was a male, aged 19 years 8 months. The casts, Fig. 1, show a condition which, from analysis of the casts alone, would be classified as Angle Class III. This is in accordance with the definition of Class III: "Cases in which the lower dental arch and the body of the mandible are in bilateral mesial relationship to the anatomy of the skull."[1]

Case Analysis.—Analysis of the case shows a marked linguoaxial inclination of the maxillary incisor teeth with the consequent failure of forward growth of the alveolar process. The mandibular incisor teeth overlap the maxillary incisor teeth to a very marked extent, Fig. 2. The maxillary anterior teeth are on a very much lower level than the molar and premolar teeth and the mandibular incisors are on a very much higher level than the molar and premolar teeth. The full face and profile, Fig. 3, show a definite deficiency in the height of the lower part of the face. There is a diminution likewise of the total face height.

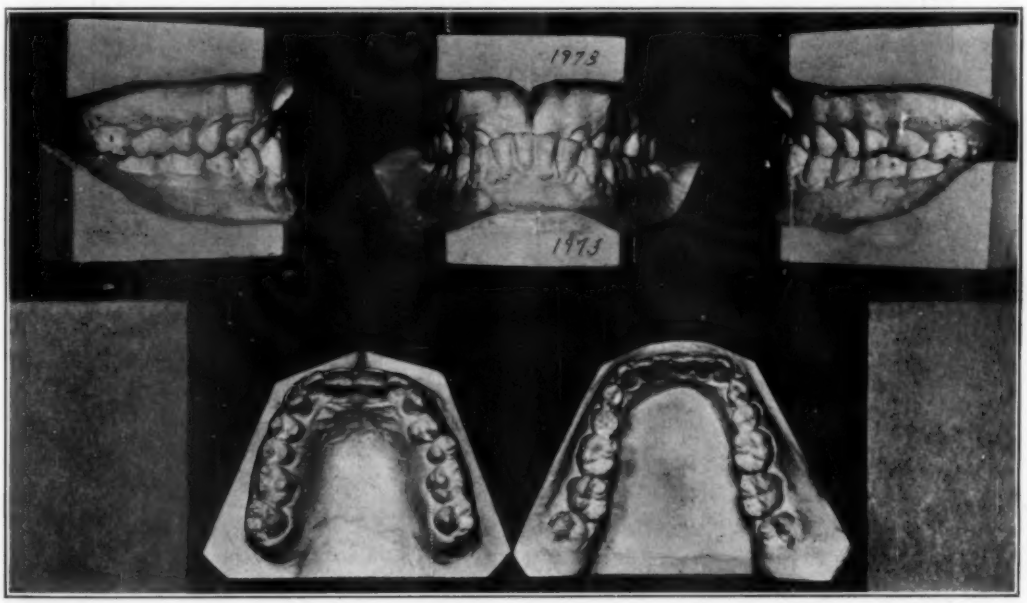

Fig. 1.—Casts before treatment.

Objectives in Treatment.—The primary objectives in the treatment were:

1. To tip the maxillary anterior teeth labially to their proper axial inclinations.

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Fig. 2.—Tooth view before treatment.

Fig. 3.—Full face and profile before treatment.

Fig. 4.—Casts after treatment.

2. To stimulate vertical growth of the alveolar bone of the maxilla and of the mandible in the molar and premolar areas.

The primary objectives have been accomplished, and Fig. 4 shows the casts after a period of seven months of treatment. The maxillary anterior teeth have been tipped to their normal axial inclinations, a marked vertical growth in the molar and premolar areas has been obtained, and we now have a normal relationship of the mandible and of the lower dental arch to the rest of the cranial structures. Fig. 5 shows the tooth view, and Fig. 6 shows the full face and profile after seven months of treatment. Table I shows us the changes that have been achieved. It will be noticed that there has been an increase in the height of the mandible in the measurement LM-LBM and a slight depression of 1 mm. in the anterior region of the mandible, LI-LBM. The total face height has been increased.

Fig. 5.—Tooth view after seven months of treatment.

Fig. 6.—Full face and profile after seven months of treatment.

DISCUSSION

In determining the status of any occlusion, it is naturally assumed that the condyles of the mandible are in their normal positions in relation to the glenoid fossae. This position is considered, clinically, to be a point as far back as the

TABLE I

FACE DIMENSIONS (MM.) OF A BOY WITH A PSEUDO CLASS III MALOCCLUSION BEFORE AND AFTER USE OF MANDIBULAR BITE PLATE (BITE PLATE INSERTED 19 YEARS, 9 MONTHS, REMOVED 20 YEARS, 0 MONTHS)

AGE YR.	AGE MO.	LOWER BORDER MANDIBLE TO LM	LOWER BORDER MANDIBLE TO RM	CI	TOTAL FACE HT. (N-M)	UPPER FACE HT. (N-PR)	LOWER FACE HT. (INF-M)
19	8	36	36	41	106	70	33
20	0	36	36	41	(Not measured at this time)		
20	3	38	38	41	110	70	34
20	6	38	38	40	108	69	34

LM, Left First Molar, occlusal surface; RM, Right First Molar, occlusal surface; CI, Central Incisor, incisal edge; N-M, Nasion to Menton; N-Pr, Nasion to Prosthion; Inf-M, Infradentale to Menton.

patient can comfortably place the mandible and the condyles. In a normal occlusion this is the centric relationship. In classifying malocclusions, it is likewise assumed that the condyles are in a position which will give us a centric relationship.

Indeed, Strang[1] tells us that "the change in the position of the body of the mandible in relation to skull anatomy in Classes II and III is not due to a shifting of the condyles in the mandibular fossae, but is simply the result of a difference in the degree of growth due to misguided and misdirected cellular activity brought about by variation from normal of those forces that are responsible for the stimulation of such cellular functions. In Class II the forces, deflected from normal by perverted occlusal stress, have in turn depressed cellular activity and directed it along wrong lines and too small a body of the mandible is the result. In Class III the forces have been exerted along lines that dictated hypercellular function, and an overgrowth of the body of the mandible, with a characteristic distribution of the bone to best conform to the perverted lines of force, has been effected."

The importance of checking the position of the condyles is indicated by the fact that if the patient were to protrude the mandible, a Class II, Division 1 case of malocclusion could be made to simulate a Class I malocclusion. Likewise, a Class I malocclusion can be made to simulate a Class III malocclusion. Angle emphasizes the fact that in Class III malocclusion there is usually an overgrowth of the mandible. This is the natural conclusion if we are to follow Angle's classification, namely, that in Class I there is a normal anteroposterior development of the mandible; in Class II, Division 1 there is insufficient development of the mandible anteroposteriorly; and in Class III there is an overdevelopment of the mandible.

Hence, in cases that appear to be Class III, it is necessary to study the clinical evidence carefully to determine the position of the condyles. The study of casts does not give us sufficient knowledge to classify from them. If function demands that a patient protrude the mandible, he may *appear* to have a Class III malocclusion. If clinical evidence shows that a patient can retrude the mandible to a greater extent than is evidenced from the study of the casts, we must determine our classification from the most retruded position into which the mandible

can be put. Frequently, this will not permit the patient to assume a functional occlusion because the maxillary anterior teeth retrude to the extent that they make it impossible for the patient to bring the posterior teeth into occlusion without sliding the mandible forward. This is so because of the fact that the maxillary and mandibular anterior teeth come into contact before the posterior teeth, and also because the patient cannot place the mandibular anterior teeth to the lingual of the maxillary anterior teeth.

When the state of development of the body of the mandible is determined with the condyles in a retruded position, many cases, which from a study of the casts alone appear to be Class III malocclusions, are in reality Class I malocclusions. These cases are very readily treated. The site of deformity is essentially in the maxillary anterior region, being primarily a lack of alveolar growth in the anteroposterior direction. In these pseudo Class III cases, because of the wedged shape of the incisor teeth, it will be found that they are relatively free from occlusal stress and that, therefore, we may actually have excessive vertical growth of the alveolar bone in the incisor regions. There is thus created an occlusal plane with two distinct levels, the molar and premolar teeth on a lower level and the incisors and canines on a higher level.

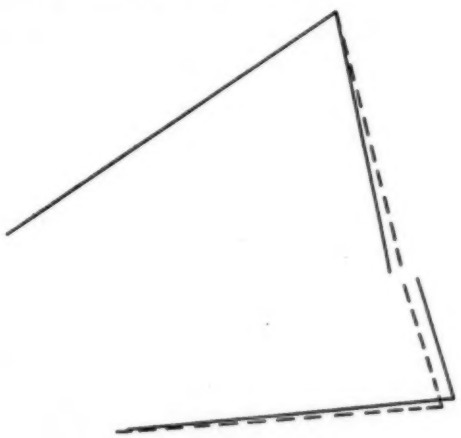

Fig. 7.—Continuous line: profile of face before treatment (age 19 years, 8 months); broken line: profile of face nine months after.

Considering the profiles of the face before and after treatment, Fig. 7, we note the marked protrusion of the mandible relative to the maxilla at the first examination, and the remarkable improvement over a period of only seven months. Appreciable forward growth in the alveolar region is patent in the maxilla, with a concomitant downward and backward readjustment of the whole mandible. The labiolingual relationship of the maxillary and mandibular anterior teeth is now normal. It is to be remembered in this connection that the "jumping of the bite" to normal was accomplished with comparative ease and rapidity. By use of a mandibular bite plate and a maxillary appliance, the bite was opened posteriorly, and thus the restraining influence of the mandible over the maxilla was removed and the forward growth in the maxilla was facilitated.

Six months after removal of the bite plate, with only nine months of treatment altogether, we find continued improvement in the incisor region; the overbite now being normal.

Turning to a more detailed examination of the changes in height of the face, including the posterior or molar region, several points of interest may be observed in the tabulated measurements. First, insertion of a mandibular bite plate, with the maxillary incisors butting against the appliance in mastication, had no perceptible effect on the height of the upper part of the face, nor indeed, on the height of the mandible anteriorly. Second, there has been definite growth upward in the molar regions of the mandible, and probably downward growth in the molar regions of the maxilla. This additional growth was facilitated by relieving the molar teeth from occlusion by means of the bite plate. Since the incisors were initially on a higher level than the posterior teeth, jumping the bite created an occlusal relationship of the anterior teeth which still kept the posterior teeth free of occlusion even after removal of the bite plate. Thus an area of diminished resistance was continued with consequent growth in the direction of this area, namely, upward in the mandible and downward in the maxilla. It is of significance that this growth is maintained in the fourth examination, and it is fully expected that it will be permanent. It will be noted that there is ultimately a slight depression of the maxillary and mandibular anterior teeth when they are subjected to functional pressure in a normal labiolingual relationship. This occurs in accordance with the findings of Oppenheim, Kronfeld, and Kellner as outlined in previous publications.[2, 3]

The increased height of the whole face is, of course, due to the wedging apart of the jaws as a result of the tipping of the maxillary anterior teeth into a normal relationship to the mandibular anterior teeth.

CONCLUSION

Cases that present an actual overgrowth of the mandible offer, at the present state of our knowledge, very little hope for a successful end result. To quote Angle[4] on this subject, "There are limits in general surgery and we should wisely recognize that there are also limits in orthodontia and intelligently expend our energies upon cases in the treatment of which success is at least probable." Cases in which the anteroposterior growth of the mandible is normal are readily amenable to treatment if the mesial relationship of the mandibular dental arch is only the result of a protrusion of the mandible. It is important, therefore, that this distinction be made between cases in which there is an actual overgrowth of the mandible and cases which only appear to be Class III. The accuracy of the prognosis is dependent upon the accuracy of the case analysis.

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DISCUSSION

Dr. Henry U. Barber, Jr.—Was anything done to reduce the exaggerated curve of Spee in the mandible?

Dr. Hemley.—It is being very definitely reduced. If you noticed in the beginning there was a very, very marked exaggeration of the maxillary incisors. They were very much higher and the maxillary molars and premolars very much lower. There has been a depression of one millimeter in the incisal region, and there has been an elevation of two millimeters in the molar and premolar region, and we hope in time to correct that still more.

Dr. Barber.—Is that not due to the vertical growth of the buccal segments?

Dr. Hemley.—No, it is due to overgrowth in the anterior segment and insufficient growth in the molar and premolar segment.

Dr. Ralph Waldron.—How could you prove that there was a depression of so much in one segment and an elevation of so much in the other? How could you prove that?

Dr. Hemley.—We have been taking measurements for some time. Just last March Dr. Wolfson came over and examined our techniques. We take a measurement with a sliding caliper from the incisal edge to the inferior border of the mandible at periodic intervals. We likewise take measurements at intervals with a sliding caliper from the junction of the buccal groove and the occlusal surface of the mandibular first permanent molar to the inferior border of the mandible. We repeat those at periodic intervals. Is that clear?

Dr. Oscar Jacobson.—What is your standard margin of error in those measurements?

Dr. Hemley.—The way that is calculated is any time our standard margin of error is three times the standard of deviation we do not use it.

Dr. Bercu Fischer.—It seems that an error of measurement of 2 millimeters is too small. When the measurements are taken directly on the face from a tooth to the border of the mandible, the only way that I think that would be exact is by projection. It seems to me that speaking of a two millimeter increase in one part and a millimeter in the other, when we measure on the integument of the face, is rather hazardous.

Dr. Hemley.—For anyone who has taken measurements over any repeated length of time and has been trained along that line, you find that the accuracy with which those measurements are repeated is very, very great. We never permit two different individuals to take the same measurements. We always use the same individual to take the same measurements. We have, of course, three different people, and we have checked them one against the other, with surprisingly accurate results. You are welcome to come up and look at our techniques. This is a standing invitation to all of you. Dr. Wolfson took the privilege of coming up there and looking at them. There are no secrets about it. We would be glad to demonstrate anything we have.

Dr. Oscar Jacobson.—I want to reframe my question. What is your approximate standard percentage of error? I want to stress the point that as you pointed it out a difference to be statistically real must be at least three times as great as the possible margin of error. There must be some error no matter how competent your investigator. I was curious to find out about what your percentage of error is.

Dr. Hemley.—All of our calculations are there. Everything we have is open for investigation, and I would be glad to have anybody come up at any time and examine them.

Dr. Robert H. W. Strang.—Whether or not the growth is in one spot or another is a little bit off the subject to me. I have troubles enough ahead of me, and I hesitate to speak now, but I do want to compliment Dr. Hemley on the thoroughness of his case analysis. I thought at first when he threw the pictures on the screen that he had made an error when he stated that he had a Class III case, but he corrected that as he went along to describe the case. The very fact that he detected the lack of vertical growth in that face and corrected it through

a proper means seems to me to indicate a very careful study primary to treatment. The lack of vertical growth in that face through the mandible forward from excessive closure simulated very closely a Class III case, yet, as you saw the patient in action, you could see the condyle slide to get occlusion. It is undoubtedly a Class I case with Class III symptoms, splendidly treated in a simple manner and carefully analyzed.

Dr. Abraham Wolfson.—Dr. Hemley mentioned the fact that I came to New York University last year to inspect the work upon which he reported here and former meetings. I do not want the impression created, however, that because my name was mentioned or because I came to inspect their technique I necessarily endorse either the technique or the findings. I was privileged to examine the work done, and Dr. Hemley extended every courtesy to me, for which I want to acknowledge my gratitude, but that does not carry with it any endorsement of either the technique or the work done.

THE PLANS AND PURPOSES OF THE AMERICAN ASSOCIATION OF ORTHODONTISTS

HARRY ALLSHOUSE, JR., D.D.S., KANSAS CITY, MO.

MR. PRESIDENT, and members of the New York Society of Orthodontists, it was a source of real pleasure to me to receive your invitation and be able to accept it, for the American Association of Orthodontists has many problems and responsibilities and, therefore, must receive help from many sources. One of the chief of these, and one which can always be depended upon, is the New York Society of Orthodontists. Many of your members have long served the interests of our Association as individuals, and, I know, will continue their allegiance with equal fidelity now that your Society is one of the components of our American Association. This is deeply appreciated by all those who have a vital interest in the progress of orthodontics, as there never was a time when a unified organization was more necessary than now. I am, therefore, glad of the opportunity of outlining to you some of our common objectives so that they may be more fully understood.

The object of the American Association of Orthodontists is briefly expressed in Article 2 of our Constitution and By-Laws, which is as follows: "The object of this Association shall be to advance the science of Orthodontics, to encourage and support research, to strive for higher standards of excellence in Orthodontic Education, to contribute its part in Dental Health Service and to promote fraternal relationships among its members."

You see that first of all we are pledged to the continued education of our members. This objective finds its chief focus in our annual meeting and in the publication of our proceedings.

It is unfortunate, of course, that all members cannot attend every meeting, but in the nature of things this is naturally impossible, especially with a membership which is nationwide. Your officers have been endeavoring constantly to improve the quality of our published proceedings, as well as the promptness with which they are placed before the membership as a whole. To this end we have received splendid cooperation from The C. V. Mosby Company, who, in addition to placing the Journal under our control, has changed its name so that it is harmonious to our Organization.

In the material presented at our meetings we are striving constantly to have the bulk of our program of a most practical nature, so that each member will have the opportunity of becoming a better orthodontist, not only along clinical lines, but supplied with information from other fields related to our work. We are also striving to keep our members in touch with all circumstances

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and trends professional, economic and political, which have a bearing on the present and future of orthodontics. We feel this to be a matter of much importance for, where encroachments are made upon professional standards, as well as those things which sustain them, a united front is essential if all the interests of our specialty are to be protected.

Our Socio-Economic Committee, for the past several years, has been vigilant in an effort to combat subversive movements which, had they come unchecked, would have allowed our specialty to be viewed in an unfavorable and totally misleading light. They have been partially successful in curtailing the orthodontic laboratory racket and through their educational efforts with certain dental journals have made valiant strides toward cleaning up misleading advertising relating to certain orthodontic laboratories. Their efforts have not been relaxed for there is still much to be done along this line. These efforts deserve our unqualified support.

Legislation affecting orthodontic practice is under a constant surveillance and in one or more instances has been influenced favorably by our committee's efforts. Along with our educational work among dentists and dental organizations looking toward higher standards of orthodontic practice, we are hopeful of continuing a plan which originated here in the New York Society of Orthodontists, through its Public Relations Committee. This is a very worth-while plan and should be of vital interest to everyone practicing orthodontics. Not only those interested in this specialty but also the entire public will be benefited if this program is supported by all worth-while men. So that this support may be forthcoming, it is necessary that as many men as possible, from all sections of the country, be made familiar with its operation. To this end we have allotted sufficient time for Mr. Dwight Anderson to fully explain this plan at our meeting in April. This, we are then hopeful of continuing on an increasing scale as the years go by, to the end that our confreres in the medical and dental professions will view the orthodontic problem in its correct light and aid us in maintaining the proper standards.

As an inspiration to our members, and especially to the younger generation, we are sponsoring the American Board of Orthodontics as a standardizing body. A similar movement has been productive of immeasurable good in the medical profession in such bodies as the American Board of Otolaryngology and similar organizations, creating standards for each special field of medicine. I might say at this time, a committee representing all branches of our profession met in St. Louis last fall, and will meet again in Milwaukee, to work out plans for a similar board functioning in all branches of dentistry. It takes time for such movements to be fully felt, but we believe that already the stimulus of preparing for certification by the American Board of Orthodontics has benefited many of our members. It has also aided in a definitely helpful way the literature of orthodontics. The results of these facts and policies, which I have outlined, have been responded to in a very helpful manner by many of our dental schools, which now offer more adequate graduate courses in orthodontics. While the private short course orthodontic schools have served a valuable place in orthodontic education in the past, I feel that to keep up with the additional requirements and

advanced strides being made by all branches of medical and dental education, men in our specialty must now look to the universities' postgraduate schools for our orthodontic education. When we stop and realize the advancement our branch of the profession has made since the formation of this association by a small group back in 1902, you can readily see why the university, with its abundant information on correlated subjects, is the more ideal place to secure this education. It is felt by many that our universities are making great progress, but there is still room for improvement. Many evils that are now in existence should be corrected as quickly as possible if they are to take the place of the private schools and have orthodontic education keep pace with the present status of orthodontic practice.

The reorganization plan is being carried out very systematically and is proving to be most satisfactory. It is indeed timely for this to take place, as there never was a need for a smooth-functioning, harmonious organization, as there is at present. Now is the time for every member to forget any petty jealousies or differences he may have and to put his shoulder to the wheel for the good of our specialty, to uphold its present high standards and prevent unscrupulous encroachments on our good name. The extreme changes in our economic picture that are now taking place are causing many changes in the practice of orthodontics by licensed members of the dental profession that are most damaging to the public, as well as to our branch of dentistry. In unity of purpose there is also strength.

Many problems remain yet to be solved in orthodontics both by its members as individuals and by its relationship to the public. These will find their earliest solution when we, as individuals, reach a high peak of efficiency in meeting the problems which confront us and, at the same time, educate our patients and the public in general, in matters orthodontic, so that the quack and the incompetent practitioner may be avoided. This latter task may never be fully attained but, from my experience, I feel a great deal can be accomplished if we will use every opportunity to educate men in important positions of influence in our press and public life. This was brought to my attention when we of Missouri were revising our dental law in 1937. Where the press had been sponsoring advertising in the past, we were able to have them not only discontinue this, but even go so far as to write editorials setting forth reasons for the enactment of such legislation. This was accomplished by going direct to the person or persons who determine the policy of the paper, explaining to them the reasons for our code of ethics, and showing how the public suffers in the hands of practitioners who are so incompetent as to need advertising to continue in the practice of dentistry. This indicates that if we keep ourselves posted with a few well-chosen remarks regarding our orthodontic problems and are ever alert to, and take advantage of, every opportunity, we can do a great deal to help our present situation.

Among the objectives mentioned in Article 2 of our Constitution and By-Laws, we find our last objective to be, "to promote among its members a fraternal relationship." From the standpoint of the welfare of our Organization, this easily might have been mentioned first, for nothing has redounded more to the steady advancement of orthodontics than the spirit of friendship and coopera-

tion, which results from our members getting together each year. Not only is the evidence of this benefit manifest on a national basis but in local communities it has obliterated jealousies and misunderstandings, which otherwise would have stood as inhibiting influences. We are hopeful that this spirit of cooperation will continue to grow and that if jealousies exist, they will always be manifest through the efforts of all to promote the good name of our specialty. After all, whether it is a family, state, a nation, or a profession, the greatest progress will come when we strive unceasingly to live up to that divine admonition, "As ye would have men do unto you, do you even unto them."

SIMPLE METHODS FOR CONSTRUCTING TWO ATTACHMENTS FOR THE BUCCAL ARCH

ASHLEY E. HOWES, D.D.S., NEW ROCHELLE, N. Y.

THIS clinic describes the making of two attachments which I have found very useful in my practice for the past several years. No originality is claimed in the principles embodied in these attachments, but the methods used in making them are simple and perhaps original.

The first one is a tie-bracket somewhat similar to the Angle edgewise arch tie-bracket except that I use it for round buccal arches of any gauge, generally 0.036 or 0.040. Fig. 1 portrays the various steps in the making of this attachment. A piece of rectangular wire is drawn, 0.032 by 0.050, and is cut about a

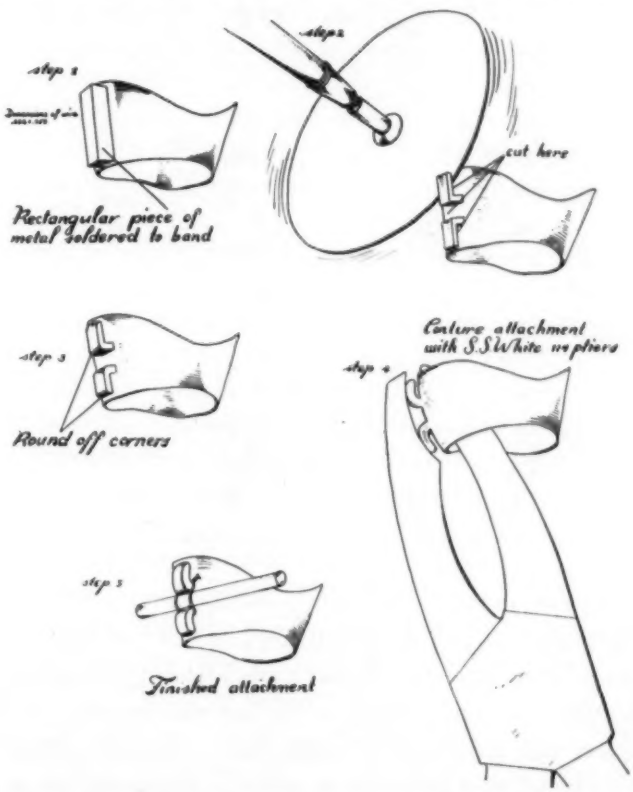

Fig. 1.—Tie-bracket attachment for any gauge wire.

tenth of an inch long and soldered to the band as illustrated in step one. Then with a very thin double cutting carborundum separating disk (size 7/8 of an inch) this wire is cut in three places, vertically downward from the gingival, vertically upward from the incisal edge, and horizontally through the middle.

Presented as a clinic before the New York Society of Orthodontists, New York, N. Y., March 14, 1939.

This is shown in step two. The horizontal cut can be made any width to accommodate any size wire. It should be just about one or two thousandths smaller than the arch which it is to accommodate. The edges are then rounded off with the same separating disk as illustrated in step three. The whole attachment is then given a curve to follow the general contour of the band by squeezing it with a pair of S.S. White No. 114 contouring pliers. (Step four of Fig. 1.) During this procedure the horizontal cut opens up slightly. It was for this reason that the initial horizontal cut was made slightly smaller than the arch wire to be used. The advantages of this tie-bracket are:

1. It is inexpensive as there is no cost of fabrication.

2. It can be made to fit any size wire, and it can be used on premolars or anterior teeth.

3. The horizontal cut, being made right through to the band, allows the tooth to be tied very closely to the arch. In other words there is no bulk of material between the arch and the banded tooth.

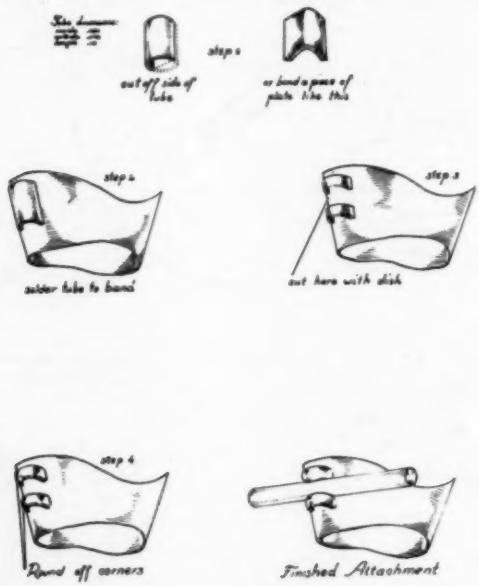

Fig. 2.—Grip bracket.

The other attachment is a grip attachment for anterior bands and can be used for a ligature or to grip the buccal arch without a ligature. It is made in the following manner. Have a piece of tubing drawn with an inside diameter of 0.036 inch and a wall thickness of 0.020 inch. A piece of this tubing a tenth of an inch long is cut off and flattened on one side until the lumen of the tube has been reached. The amount that is cut off varies according to the diameter of the buccal arch to be used. If a very fine arch is to be used, naturally more of the tube would be cut off. This can be done with the same separating disk that was used for making the other attachment. The tube then has an open side to it. This step can be eliminated as the tubing can be purchased with the side already cut off. With this tubing all that is necessary is to cut it into the proper lengths. Approximately the same result can be obtained by having

a piece of material rolled down to 0.10 inch by 0.020 inch thick. The end of this is bent at approximately right angles, avoiding a sharp bend, and it is then cut off. Either of these two pieces of metal, as shown in step one of Fig. 2, can be used to make the attachment. The tube is better, but the tubing from which it is made is more expensive than the flat metal strip. This piece of tubing is soldered vertically to the band with the open part against the band, as shown in step two, Fig. 2. Then, with the separating disk, a horizontal cut is made in this tube wide enough to accommodate the arch wire to be used, step three of Fig. 2. This leaves two partial rings on the band with just enough space between them to accommodate the arch. The edges of the rings are smoothed off with a rubber polishing wheel as shown in step four. Then with the arch wire between the rings, they are given a slight pinch with almost any pair of pliers, just enough to give them a grip around the arch. The arch can then be snapped in and out of the attachment. The advantages of this attachment are:

1. It holds the arch in place without a ligature.

2. A ligature can be used if the arch stands far away from the attachment at the start. (I generally prefer the other attachment in these instances.)

3. There is no bulk of material except the thickness of the band between the tooth and the arch. This was mentioned as an advantage for the other attachment. I think it is very important in any attachment of this kind because, if adjacent teeth have no bands and yet are to be ligated to the arch, no compensation in the arch itself has to be made for a thickness of material in the center part of the attachment.

4. The tube can be easily located at any part of the band. Thus, if desired, the gingival part of the bracket can be on the very edge of the band.

5. By this method a vertical tube which is already in place on the band can be converted into a snap attachment for a horizontal buccal arch merely by making a cut through the middle of the tube without removing the band.

6. For those who use pinch bands, pinched on the labial surface, instead of seamless bands, this attachment has a very decided advantage in that it fits snugly to the band without having the pinch interfere. It definitely reinforces a pinched band.

7. This attachment can be made by utilizing old half round tubes (which are just the right length) or by cutting up old buccal tubes. The wall thickness of these tubes is a little thin for the purpose but they can be padded out with a bit of solder. The attachments made in this way are not as neat as those described above.

650 Main Street

TREATMENT OF A BILATERAL DISTOCLUSION CASE BY USE OF THE OLIVER GUIDE PLANE

FREDERICK R. ALDRICH, D.M.D., COLUMBUS, OHIO

History.—The patient, a girl of 12 years 6 months, was above average in her physical development when brought to my office on Dec. 3, 1937. During the past year she had developed quite rapidly and was unquestionably in the middle of a growth spurt that has been brought to our attention so clearly by Dr. Mershon and Dr. Howard.

The father's arches had developed normally, and the mother also had well-developed arches. Both the child and her parents had strong, well-developed teeth.

A physical examination showed the child to be normal. She had been breast fed for approximately one year. The tonsils and adenoids were removed at 5 years of age. The adenoids were quite large and may have been contributing factors to her malformation. She had measles at about 7 years of age, and other than the occasional cold, the subjective history was negative. She had never sucked her thumb or fingers or had any other mechanical habit that might have caused her malocclusion.

Etiology.—Her deciduous teeth were lost at the normal intervals. On examination of the child's structural development, the models, x-rays, and as much of the subjective history as possible, I decided the obstruction of her nasal passages, due to the retention of enlarged tonsils and adenoids over a protracted period of time, was the contributing factor to her malformation, as her hereditary background seemed to be negative.

Diagnosis.—The arches were well developed horizontally, and her teeth were well formed. There was a definite lack of vertical development, however, and because of the general appearance and molar relationship, the case was diagnosed as a bilateral distoclusion. The maxillary anterior segment had drifted forward, due to the lack of tone of the orbicularis group of muscles.

The child gave a history of having worn an orthodontic appliance over a period of five and one-half years. This appliance consisted of banding a number of the teeth on both the maxilla and the mandible. The anterior development of the mandible had unquestionably been interfered with or held back. The profile showed that no improvement had taken place, but rather was becoming progressively worse.

The parents had discontinued orthodontic treatment after five and one-half years, owing to the fact that they could note no facial improvement, and they were advised at this time that it would be necessary to extract both the maxillary right and left first premolars. They objected strenuously to the child losing any perfectly sound second or adult teeth.

Fig. 1 shows the condition of the child's mouth at five years of age before any orthodontic treatment had been undertaken. I would like to call your atten-

Read before the American Association of Orthodontists, Kansas City, Mo., April, 1939.

tion to this child's profile at this point of development. Her nose and chin were apparently out of balance. She had a deep sulcus in her chin, and her rather thick lower lip showed too much vermilion border for an esthetic-appearing mouth. The second vertical growth spurt had not taken place at this point. I felt the extraction of teeth at the time the child reported to my office would not be good orthodontic procedure. In other words, the maxilla would be brought back to occlude with an underdeveloped lower arch or jaw. Dr. McCoy and Dr. Dewey in their textbooks many years ago showed us that a tooth in the mandible has a certain surface of a tooth in the opposing jaw that it should occlude against. And yet some of us extract teeth in this particular type of case disregarding lack of cranial development. We all realize that sharp lines or angles should be avoided as much as possible. If we were to extract teeth for this child at 12 years of age, she would present a hard, angular-appearing face. In other words, the two features, her nose and thick lower lip, would be grossly exaggerated. Teeth should not be held in rigid attachment while undergoing orthodontic treatment. In other words, we must not forget our greatest asset, growth, and appliances should be constructed to interfere with nature as little as possible. We, in our office, feel that a better esthetic appearance can be obtained by not sacrificing good tooth structure in this particular type of case.

Fig. 1.

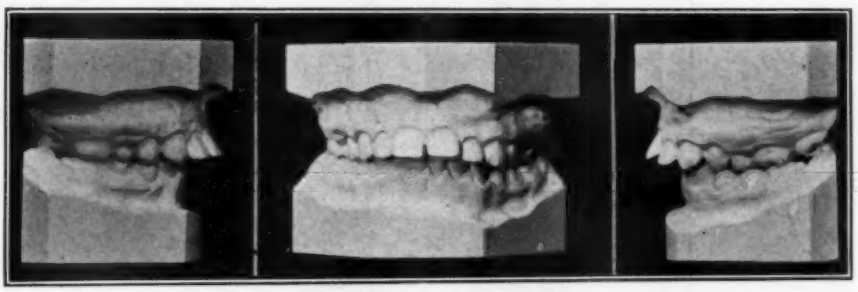

Fig. 2.

Figs. 2 and 3 show the models and x-rays of the case as it was when she presented herself at my office some seven months after treatment had been discontinued. I would like to call your attention at this time to the root resorption that is so clearly shown in Fig. 3. This was caused possibly by holding the teeth

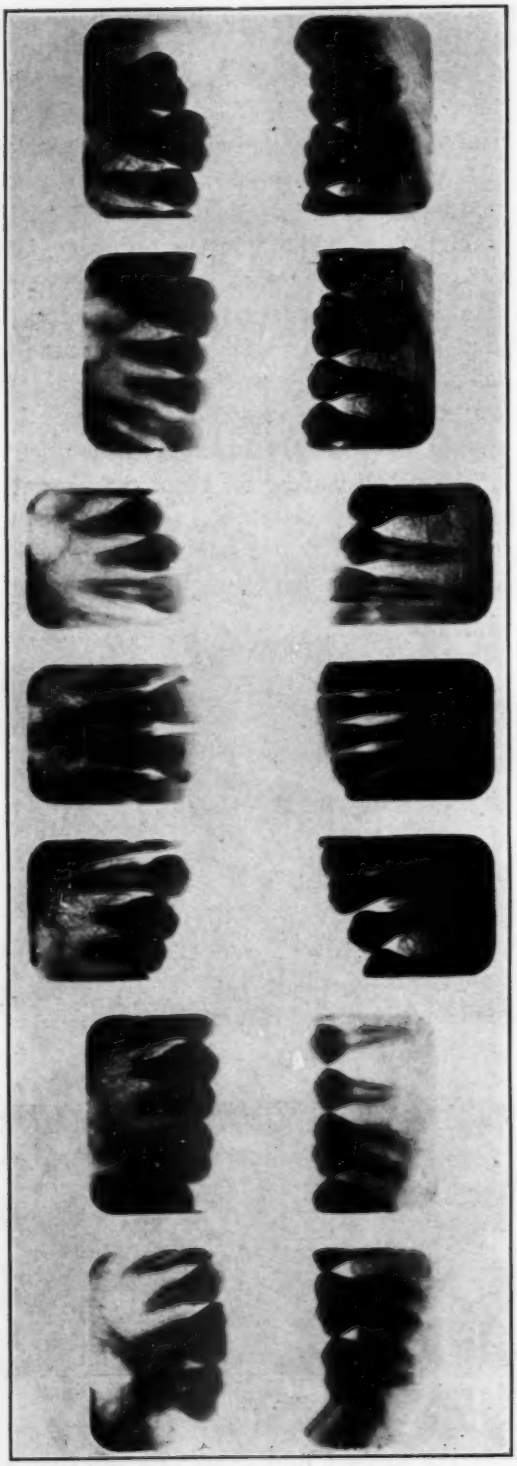

Fig. 3.

in rigid attachment over a period of several years. Dr. Beck and others, however, have shown us cases that have root resorption that have never been mechanically interfered with.

Treatment.—The molar bands, which we prefer making direct, were constructed on the six-year molars. We will omit the technique of band and appliance construction, as we followed the technique as used by Dr. Oren Oliver

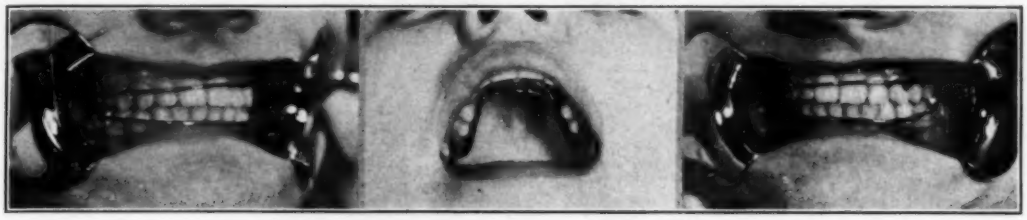

Fig. 4.

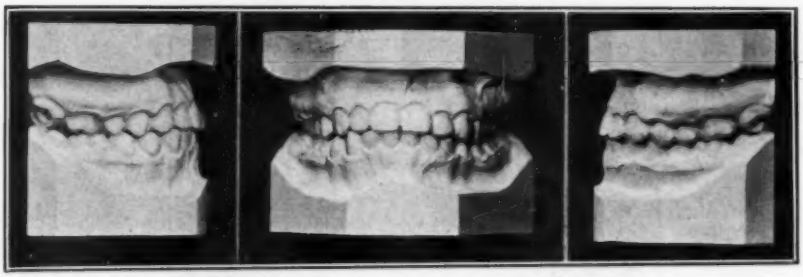

Fig. 5.

Fig. 6.

as nearly as possible. The appliance consisted of a plain labial and lingual on the mandibular arch and a plain labial with intermaxillary hooks attached to the maxillary labial at the canine bend. We felt that the mandible had been held back and that normal forward development had not been allowed to take place. Therefore, we constructed an Oliver guide plane on the maxillary lingual to assist nature in creating vertical growth as well as to unlock the pro-

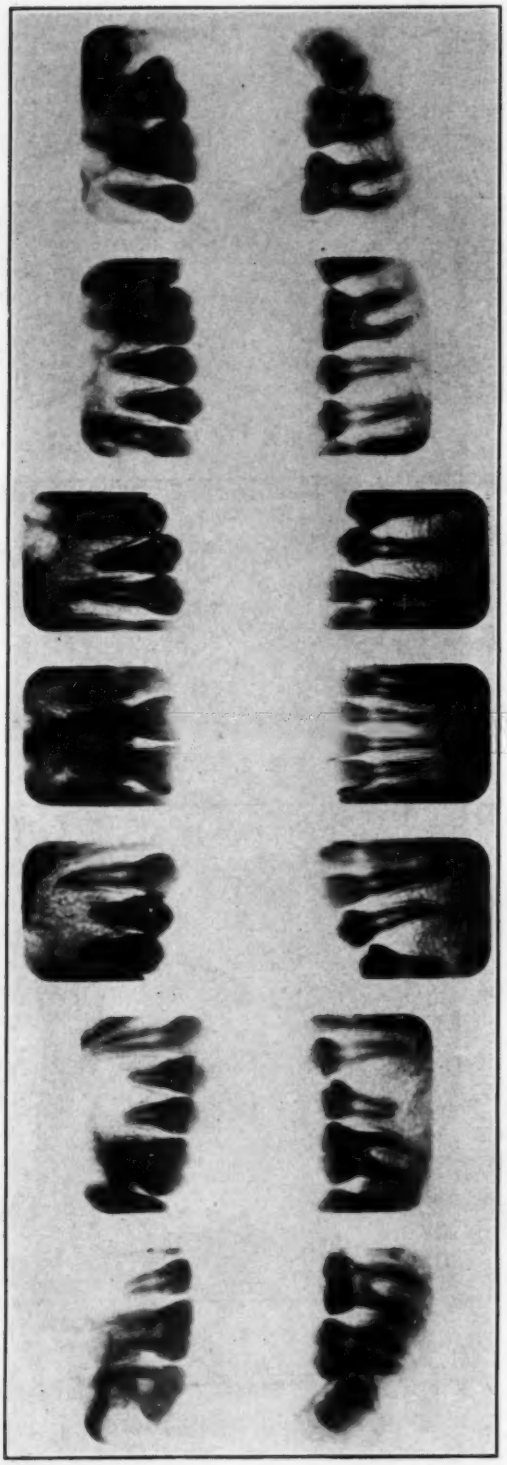

Fig. 7.

tracted retardation of the forward development of the mandibular arch. Some horizontal constriction was noted in the canine region; therefore, we added a simple auxiliary spring to develop the canines laterally.

The patient wore intermaxillary rubbers twenty-four hours a day for approximately three months. The maxillary labial appliance was constructed to rest at about the middle of the crowns of the maxillary four anterior teeth to bring them into a more perpendicular alignment. Nearly all bilateral distoclusion cases need vertical development which can be so easily obtained by the proper use of the Oliver guide plane. At the end of three months intermaxillary elastics were worn at night only, and these were discontinued altogether about ten months after the beginning of treatment.

Fig. 4 shows the appliance in the child's mouth. These pictures were taken on Feb. 27, 1939, or approximately one year after the child came under our supervision. At this time the guide plane was removed. Please note the change in the anteroposterior relationship of the arches, and also that considerable vertical development has taken place and this child enjoys her full complement of teeth.

Fig. 5 shows the models made from the impressions of the teeth as of Feb. 27, 1939.

Fig. 6 shows the pictures of the child's mouth after treatment had been completed.

Fig. 7 is an x-ray of the child's mouth after she had undergone orthodontic treatment in our office for a period of one year. A comparison of the two x-rays, namely, before and after treatment pictures, show no added root resorption which we feel is due to the fact that the teeth were not held in rigid attachment, and during mastication enjoyed nearly all of their normal movements; therefore, growth and regeneration were allowed to take place.

Prognosis.—This girl enjoys an occlusion at the present time that is normal for the individual. Her full cranial development has possibly not been attained. I do feel sure that she will retain her occlusal balance, and we will all agree that her two prominent features, the tip of her nose and her rather broad mandible, have not been accentuated. The deep sulcus and exaggerated vermilion border of her lower lip have been modified. Personality is often predetermined by looks, and I believe this child has an opportunity for a happier outlook.

327 E. State Street

CLINICAL OBSERVATIONS RELATING TO THE NORMAL AND ABNORMAL FRENUM LABII SUPERIORIS

JOHN E. TAYLOR, D.D.S., HOLLYWOOD, CALIF.

IN REVIEWING the literature on the subject of maxillary frenum one is impressed with the thought that, unfortunately, regardless of the number of authors and the volume of their products, the frenum remains one of our important and definitely controversial problems. And while making such a study one is also overwhelmed with the idea that the subject has been so adequately covered by previous writers that little remains to be said concerning it.

However, there are many who claim that the frenum is no longer a problem at all, that the question is completely settled. These individuals may be divided into two groups. The first group will insist that, if the frenum is abnormal, it should be surgically removed, and the problem which is a simple one is immediately settled. The second group will assert emphatically that there is no problem to consider in this matter because the frenum, whether normal or abnormal, should rarely, if ever, be surgically removed. This very fact that we have such diametrically opposed opinions concerning the fate of the frenum is sufficient evidence that the matter still remains one of our treatment problems.

What is there about this little fold of mucous membrane that seems to act as a red flag to those of divergent viewpoints? Why does it seem to be such a perennial cause of battle? Perhaps there has been a lack of tolerance for the experience and opinions of the other fellow. Maybe there has been too much antagonistic and destructive criticism which has had a tendency to prevent a truly harmonious approach to the problem. Surely there must be an end to this quest for the truth, some common ground of understanding regarding the question.

It has been said that "any one convinced against his will is of the same opinion still." With that thought in mind, this paper will be devoted to a presentation of the facts, in a manner calculated to appeal to your reasonable acceptance of them.

It is unnecessary to go into a study of the histologic structures that make up the frenum and surrounding parts. Suffice to say that the frenum is mainly composed of mucous membrane and white fibers of connective tissue. In the infant it is attached on the palatal side of the alveolar crest at the midline and extends upward to the inner surface of the upper lip. As development takes place, the palatal attachment gradually rises toward the labial until, in the adult, it is normally attached about one-half centimeter above the gingival margin.

Previous writers have expressed the opinion that perhaps the attachment does not actually rise, but that due to growth adjustments taking place incident to the eruption of the permanent central incisors and the added increment of bone,

Read before the Thirty-Seventh Annual Meeting of the American Association of Orthodontists, Kansas City, Mo., April 19, 1939.

its relative position gradually rises from the lingual to the labial side of the alveolar crest. Too much emphasis cannot be placed upon this important fact. That the lower end of the attachment does gradually rise from the lingual to the labial during development is well known to all investigators who have made a study of the question.

It is apparent that considerable confusion exists in the minds of many as to what constitutes abnormal frena. This seems to be the real bone of contention over which so many battles have been fought. To those who advocate the surgical removal of frena, when a child presents a maxillary diastema, the diagnosis is made upon two factors, viz., the width of the band of tissue and the lowness of its attachment. They note the wide space, and that said space is occupied by "meaty tissue," including the frenum. They grasp the upper lip and by placing tension on the frenum note that its lower attachment extends perhaps over the crest of the alveolar ridge at the midline. This condition, regardless of the age of the child, is diagnosed as abnormal frenum, and its surgical removal follows.

Many years ago, Mershon stated that it is a normal condition when the permanent maxillary central incisors erupt with a space between them. His observations have since been confirmed by the majority of thoughtful orthodontists.

Dr. Samuel Lewis states, "The permanent central incisors lie within the maxilla, separated by the maxillary suture. When they break through the bone they are necessarily separated from each other by varying degrees." He further states, "that in over 97 per cent of untreated cases the space is present early in life, but that it disappears by the time the laterals and canines erupt." All that we ask is that you give them time. Our contention is that if the space is normal and the low attachment also normal up until a certain age, why operate? In view of this well-known fact we are naturally impatient with those who advocate the surgical removal of frena even before the eruption of the permanent central incisors.

In an attempt to either disprove or confirm the findings of Dr. Lewis relative to the natural closing of the space between the maxillary central incisors, incident to the eruption of the lateral incisors and canines, the writer undertook the task of making a survey of a relatively large number of school children.

The support of the Board of Education of the Los Angeles City Schools was secured and permission granted to carry out the investigation. The Elementary Grade School and the High School of North Hollywood, Calif., were designated for the survey.

I was assisted in this work by a member of the dental staff of the Board of Education. The purpose of this examination was, first, to determine whether a maxillary diastema was a normal condition in children of five or six years of age, and second, to find out whether this space normally closed upon the eruption of the lateral incisors and canines. The result of our investigation was as follows:

In the Elementary Grade School we examined a total of 516 children ranging from 5½ to 11 years of age. Starting out with the very young children, of approximately 6 years of age, we examined two rooms of such children, a total of sixty-eight, and we found sixty-six of them with a maxillary diastema. In another room of thirty-three children from 6 to 7 years of age we found twenty-

nine with a diastema. Moving up the scale of years we next examined a room containing thirty-seven children of from 10 to 11 years of age. We found nineteen out of the thirty-seven without a diastema. Since statistics and figures are always tiresome, we will not dwell on the detail findings in each room. Suffice to say that after we had examined fifteen rooms with a total of 516 children it became apparent that further examinations were unnecessary.

In every case the findings of Dr. Lewis were confirmed. It became definitely established in our minds that it is normal for children to have a maxillary diastema at 6 years of age. It was also just as apparent that this diastema went through a gradual process of disappearing as the years advanced.

We next examined a total of 1067 high school boys and girls ranging in age from 12 to 18 years. Out of the 1067 children examined in this group, we found a total of seventy-five with a maxillary diastema. A careful diagnosis was not attempted, and no effort was made to determine the cause in any case. Out of the seventy-five cases noted, however, it was apparent that a more careful examination would have revealed that many of them were due to causes in no way related to the frenum.

The significance of this survey may be summed up as follows: It confirms the statement of Mershon and the investigations of Lewis that it is a normal condition that we are dealing with in these young children instead of an abnormal one.

Those of us who are opposed to the surgical removal of frena maintain that the so-called abnormal frenum is not the true cause of the spacing of the maxillary central incisors, or a cause and effect relation. We believe that the space may be the result of a number of causes among which are:

1. From infancy up until 10 or 12 years of age it is a normal condition.
2. Tongue, finger, or lip habit may produce the diastema.
3. Endocrine dysfunction. Hypopituitarism causes an overdevelopment of the arches and consequent spacing of the teeth.
4. Congenitally missing teeth.
5. A short upper lip accompanied by anterior dental protraction.
6. Deficiency of tooth structure such as dwarf lateral incisors.
7. One or more abnormally large-sized mandibular teeth in the anterior region of the mouth.

It is well to remember that when a diastema exists between the maxillary incisors the space must be occupied by some kind of tissue. This tissue is unprotected and must constantly withstand the rigors of mastication. The frenum itself, as well as the adjacent gum tissue, is covered with a layer of squamous epithelium and readily becomes toughened as a result of function.

Those who advocate the surgical removal of frena often say, "The operation is simple and does no harm, so what are your objections to it?" It is a fair question, and our reply would be that the principal objections to the operation are as follows:

1. It is unnecessary.
2. Scar tissue is usually left between the teeth.
3. The possible creation of an unsightly point of soft tissue under the fold of the lip.

4. The danger of severing the transceptal fibers. These fibers are a part of a group of fibers composing the peridental membrane. They pass from the cementum of one tooth to the cementum of the adjacent tooth. Their function is to bind the teeth together and to support the interproximal gingivae.

5. The resultant lack of control of the lip and the loss of the normal vermilion border.

6. Many orthodontists maintain that it is more difficult to close the space and retain the position in those who have been operated upon than in those who have not been operated upon. This may be due to the severing of the transceptal fibers or to scar tissue or both.

7. There is a better way. There is a malocclusion present, and it should be treated as such. Close the space by means of routine orthodontic procedure, and the objectionable band of tissue is eliminated by pressure atrophy.

Some apparently doubt that pressure atrophy will remove abnormal frena. It has been the writer's experience, and confirmed by many others, that this procedure has never failed. This method has been so successful that the question of abnormal frena is not now, nor has it ever been, a problem in my practice.

Perhaps we should not go so far as to say that there is no such thing as an abnormal frenum or to say that some of them should not be removed surgically. We can say, however, that we have not encountered one.

From time to time it has been my pleasure to receive many letters from men who are in the front ranks of the orthodontic profession in America whose opinions on this subject coincide with my own. Time will permit the reading of but one of those letters. The opinion expressed in this letter so briefly and adequately expresses the viewpoint of the great majority of thoughtful orthodontists that it makes any further quotations unnecessary. He states, "I do not advocate the removal of the frenum labium as an orthodontic procedure. For more than twenty years I have not encountered a case in my practice where it was necessary. Prior to that time, I did utilize the procedure, but regret that I did so. Not only is the operation devoid of benefit but frequently is the cause of serious and lasting damage."

The fact that so many of these operations are being performed is probably due to the fact that in the early days of orthodontic history, most, if not all authors, including Angle, believing it to be a cause of trouble, advised the surgical removal of all questionable frena. This doctrine was very widely spread throughout the dental world. No particular effort was made to determine the necessity for the operation or of any possible damage resulting from it.

It is interesting to note the timidity with which modern writers on this subject are gradually raising the age for the operation and also reducing the number that are to be considered as abnormal and in need of it. Early writers advocated the removal of frena from birth up until the sixth or seventh year, while modern writers now generally concede that the operation should not be performed until after the eruption of the permanent canines, if at all.

Some one, I believe it was Lischer, once said, "One of the great tragedies of life is the murder of a big theory by a little fact." Those of us who are opposed to this operation believe it to be an obsolete theory that deserves to be murdered by a little fact. Some of us feel that because the seed was planted long ago, and

vigorously cultivated in the minds of the dental profession as well as in the minds of doctors and school nurses, we must keep up the battle until it is generally conceded to be, what it is, in fact, a fallacy of another age.

In order to overcome the widespread belief that this operation is good practice, we must of necessity repeat and review the conclusions reached by so many of our more experienced and thoughtful members. We must allow this newer knowledge to percolate down to the grass roots of dentistry. Thousands of so-called abnormal frena have been needlessly removed, and it is time to put an end to this "slaughter of the innocents."

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SOME INTERESTING DATA IN THE PEDIATRIC FIELD

ANTONIO J. WARING, M.D., SAVANNAH, GA.

IN AN address delivered to this society at its annual meeting last year, Dr. L. F. Barker[1] stated that "perhaps the closest relationship should exist between the specialist in diseases of children and the orthodontic specialist." The relationship is neither easy to define nor to establish. Both pediatrics and orthodontics have passed beyond the stage of adolescence. The pediatrician is no longer a doctor who feeds a baby, and the orthodontist is no longer a dentist who straightens teeth. The present-day pediatrician should be sufficiently well equipped to keep reasonably normal the phenomena dealing with growth, development, and function, from infancy to early youth, and to treat with competency all abnormal variations in the child pattern. Preventive pediatrics is no small part of his task; a speaking acquaintance at least with psychiatry and a deep acquaintanceship with psychology are quite necessary. Lately biochemistry, endocrinology, and allergy have all become his bedfellows —sometimes to his discomfort—and sometimes to his discomfiture. The present-day orthodontist should be sufficiently well equipped to keep reasonably normal the phenomena dealing with growth, development, and function of the facial pattern, from infancy to early youth, and to treat with competency all abnormal variations in the same. These are very general definitions, of course, but sufficiently true and sufficiently accurate to suggest a common interest. To the orthodontist the Mendelian law and the remorseless behavior of genes and chromosomes have brought some embarrassment and the requirement of greater scientific knowledge in the prosecution of his specialty. Originally a mechanical engineer and metallurgist, he now must become an anthropologist and an anatomist and take for uncomfortable bedfellows, biology in the highest sense, congenital abnormalities, and the endocrinopathies.

PEDIATRIC OBSERVATIONS ON THE ETIOLOGY OF MALOCCLUSION

Cooperation between the pediatrician and orthodontist was far easier in the early days when rickets, diseased adenoids and tonsils, habits such as thumb-sucking and others, were considered prime etiological factors. At the present date, however, the biologic orthodontist holds the cards in the etiological role—environmental causes are spelt with small letters. In preparing for this paper I have read much orthodontic material and in doing so I have been very definitely impressed with the high quality of investigation and the excellence of presentation evinced by workers in the orthodontic field over the past five to ten years. There is overwhelming evidence in favor of the hereditary factor playing a major role in the production of malocclusion. A noteworthy investigator (Byron O. Hughes[2]) showed that in a "relatively harmonious Armenoid population" the existence of wide, ample jaws and good teeth revealed only 7 per cent of cases of malocclusion. The admixture of this

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Armenoid group with Nordic or Mediterranean types immediately produced a marked increase in cases of malocclusion among the descendants. Hughes states, "Hybrids of parents that show widely divergent head and face types have a higher percentage of malocclusion than those whose parents are similar in head and face form—in crossing divergent races malocclusion is likely to result."

In the endocrine field from the pediatric angle, Kerley[3] has emphasized the role hypothyroidism plays in faulty dentition and malocclusion. He also makes the important observation that similarity in certain types of dental anomalies in family groups and generations should call our attention, not only to phylogenetic factors but possible subclinical endocrine factors as well. The work of your own Dr. Clinton Howard is prominent in both the hereditary and endocrine fields in its scientific pursuit of cause and effect. Some anthropologists of repute even state that all cases of malocclusion strictly follow hereditary patterns.

If this latter statement were true, then I see but little aid for the orthodontist insofar as the pediatrician is concerned; about all we can do is to refer the malocclusive case to the dentist or orthodontist as promptly as we make a diagnosis, with a pat on the shoulder and a parting "God bless you"! I do not believe that this is the whole story, however. "Heredity determines how far an organism can develop, while environment determines whether it will ever get there" (Joseph A. Pollia). What is true of the body as a whole applies to its component parts; the cranium with its face mask pushed relentlessly toward the ripened completion of its hereditary urge is retarded here or marred there by the buffeting of life's mishaps. Rapid growth connotes vulnerability[4]—the brain manifests half of its postnatal growth in the first year of life, and since face grows with cranium, inevitably the face in the first year of life is a vulnerable zone. It is now well recognized that skeletal growth is a fair indicator of bodily growth, and T. Wingate Todd used to call it "the skeletal time clock." At any rate his studies recorded definite changes in the facial mask and the jaws as the result of malnutrition conspicuously in early years, and other pathologic factors at later periods.

As factors in "the retardation or repression of skeletal maturation" (and by inference one might say facial skeletal maturation as well) Dr. Todd[4] lists:

Hypothyroidism (Dercum's disease correlated)
Pituitary disorders—Fröhlich's syndrome (achondroplasis correlated)
Gonad disorders
Juvenile Paget's disease and osteomalacia
Juvenile diabetes (insulin possibly prevents retardation)
Anemias—erythroblastic—sickle cell—acute myelogenous leucemia
Lead poisoning
Infantile syphilis
Coeliac disease
Scurvy
Rickets
Febrile disorders like the exanthemata

Digestive disorders—including improper feeding, changes in diet, and exudative diathesis.

To this list I would like to add prematurity, malaria, tuberculosis, hookworm disease, and all chronic anemias of either primary or secondary type. There are undoubtedly other pathologic states which I have omitted.

In the further discussion of the biologic factor, Hughes[2] states that study in the summer of 1938 of 500 undernourished children recorded not only physical and mental stunting but also a marked preponderance in dental caries and malocclusion when this group was compared with a similar healthy group of approximately the same racial stock. Psychologic and dietetic treatments were both very much in order.

The tree in the forest grows by its inherited pattern and follows the immutable ancestral command of its forebears. A cross section of its trunk, however, shows by rings the effect of environmental depressing factors, drought, pest, and fire, perhaps. If we accept the major factor of heredity in the production of jaw and tooth deformities, and at the same time acknowledge an important but possibly secondary role played by the environmental factors of malnutrition and disease, then pediatrician and orthodontist can devise a more satisfactory type of cooperation than exists at present.

At this point and before I dismiss a somewhat cursory discussion of the causes of malocclusion, I quote a few noteworthy observations recently forwarded me by prominent men in the pediatric field:

> The teeth buds begin to form somewhere before the fourth month of intrauterine life and continue to appear throughout the prenatal period even to the extent of having some of the second teeth buds appear before birth. If nutrition does play a part, then deficiencies during this extremely sensitive budding stage should have some of their worst effects. In other words, whether it is caries, or whatnot, I do feel that good nutrition in its relation to bone and tooth development offers the best basis for proper development and for securing the best results in reparative measures.
>
> HORTON CASPARIS, M.D.
> Prof. Pediatrics, Vanderbilt University
> Nashville, Tenn.

> If I were to attempt a direct answer to the question in your letter, I would say that environmental factors are more important; however, I am sure that this impression is because of the kind of material of which I see most. I see very few healthy children who might have malocclusion because of hereditary factors, but do see a number who particularly have had severe chronic paranasal sinus infection and apparently from such a cause have developed malocclusion.
>
> ALEXIS F. HARTMANN, M.D.
> Prof. Pediatrics, Washington University
> St. Louis, Mo.

> The most important problem from the pediatric standpoint would seem to be to determine whether a given abnormality in the jaw will persist if neglected, or whether it will disappear with the natural development of the jaws. This is, however, a very complex problem and one upon which even orthodontists are not very well informed . . . the pediatrician should, however, know in what directions growth is most rapid in the jaws at various ages, and what to expect in the way of temporary crowding and malocclusion. . . . The dominant consideration is unques-

tionably the fundamental pattern of development in the child which is determined by heredity. I would not, however, minimize the definite influence of the first teeth upon the development of the jaws, of use of the jaws, or of the distortions due to certain habits. There is some evidence in animals that faulty growth of jaws is contributed to by faulty nutrition.

HAROLD C. STUART, M.D.
Department Child Hygiene
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. . . I confess that I am somewhat skeptical as to whether these early infections play any significant part in the development of teeth and jaws in which the orthodontist is interested. We are much more impressed with the significance of hereditary or constitutional factors in the development of malocclusions than we are with the importance of such environmental factors as illnesses and habits. One of the striking findings in most of our work is the potency of the growth process—that is, its tendency to progress in each child[5] according to his own individual pattern with little regard for the usual run of infantile and childhood diseases and disorders, or for human variations in his immediate environment.

I do not mean to imply that environmental influences play no part in the course of his development but rather that they are somewhat less directive and somewhat more permissive in nature than is often thought.

My chief concern at the moment is to get both orthodontist and pediatrician to consider the child as a whole living functioning organism (including his actual physical and physiologic setup and his psychologic and personality make-up and functioning) before deciding on instituting treatment. The teeth and jaws are after all only one part of the whole child and should not be considered except in relation to the growth and functioning of the child. The demonstrated power of the growth process in correcting abnormalities or at least in working toward an optimum condition for the individual is often seen and accepted in pediatrics. I feel that the orthodontists need to be shown its potency.

ALFRED H. WASHBURN, M.D.
Director Child Research Council
University of Colorado School of Medicine
Denver, Colo.

A COMMON MEETING GROUND FOR ORTHODONTIST AND PEDIATRICIAN

In discussing the scope of orthodontic service C. A. Corrigan states that in the United States twenty million children with oral anomalies need orthodontics, and only 1 per cent is treated. Joseph D. Eby believes that 80 per cent of the children of today have malocclusion. If these statements are approximately correct, then the orthodontist is only on the fringe of untouched virgin territory, and he needs all the assistance he can obtain from related professional groups. What aid can the pediatrist give?

In the first place the pediatrician is if nothing else sound tooth conscious. His early fraternizing with the dental profession is over dental decay and his first friendly quarrel is over the same subject. The pediatrician desires the filling of the deciduous tooth and the removal of rotten stubs for the same reason—the general welfare of the child. It is sometimes quite difficult for the dentist to see beyond the facial pattern and agree with the pediatrician on the subject of tooth extraction.

If the orthodontist has no teeth to use as tent pegs for his appliances and ingenious gadgets, he is in a helpless position. By diet, by vitamins, by

endocrine dosage, by any factor in his power, the pediatrician will fight for sound teeth, and incidentally for the orthodontist. In the 1937 meeting of the American Medical Association a scientific exhibit furnished by Dr. I. N. Kugelmass, pediatrician, and Dr. S. C. Miller, dentist, demonstrated from the standpoint of growth-spurt periods, the first two years, six to eight years, and twelve to fourteen years, the coinciding age limits of most prevalent dental decay. They presented data to prove that correct feeding will protect about 65 per cent of these children, and they have devised suitable high mineral and low fermentation diets.

What about the role played by adenoids and tonsils in malocclusion? Dr. Clinton Howard[6] has shown conclusively how little their hypertrophy plays a part in orthodontics. The important factor however is not the hypertrophy per se but the pathology of these lymphoid masses. We can pass over briefly the triad of acute rheumatic fever, chorea, and endocarditis, sequelae to tonsillar infections, particularly in northern climes. We must also realize, however, that the child who runs a low temperature, eats badly, and fails to gain over long periods of time, may also be a sufferer from a chronic tonsillitis. The general retardation in growth and development taking place will inevitably produce a lag in facial growth as well.

Also the establishment of "mouth breathing" from whatever cause is a true danger point. It is accepted as a fact by all physiologists that disuse of any part or organ of the body brings in its train progressive loss of function with degenerative changes in all tissues. The side-tracking of nasal passages and accessory sinuses in the phenomenon of respiration must never be permitted. Bowen and Balyeat[7] have presented some interesting data showing that many children with perennial nasal allergy develop a dental-palate deformity with protruding upper incisors.*

Briefly thus far I have referred to the services of the pediatrician in the fields of dental decay and nasopharyngeal disease with relation to preventive orthodontics. These are examples only of many pathologic states that hinder growth and development in childhood. And whenever I speak as a pediatrician of general growth repression, the orthodontist should visualize the facial growth repression, of necessity a component part in the constitutional lag.

Lastly, in discussing our mutual relationship, it is well for the orthodontist to bear in mind that pediatricians creep where orthodontists run. In other words, be patient with, and instructive to, the pediatrician, who handles his orthodontic primer with awkward fingers. Five years ago Dr. J. M. Lewis remarked rather plaintively, "In regard to malocclusion, we pediatricians know very little about the subject; we have not been taught what constitutes a mild, a moderate, or a severe case; which types are more adaptable to early treatment and which cases do better with treatment later on in childhood."

*Recent communication: "The longer we work the more profoundly Dr. Bowen and I are impressed that we were correct in our original statement about the importance of nasal allergy in children as a cause of excessive overriding of the upper incisors and V-shaped palate."—Ray M. Balyeat, M.D. (Feb. 27, 1939).

Dr. Lewis' observations are still pertinent today, and though I barely whisper the idea, it is possible that the dentist and the orthodontist have some difficulty over these matters!

One final practical point, and I am through. One occasionally hears from the orthodontist, "If only the physician in charge of this child had referred him to me at an earlier date." In defense of my confreres permit me to state that the pediatrician, at least, seldom makes this mistake in spite of his limited knowledge of malocclusion. In 90 per cent of the cases he sends his patient at a tender age to the dentist for the first fillings in his deciduous teeth. Orthodontically speaking there is possibly more lost motion between the dentist and the orthodontist than between the pediatrician and the dentist.

In conclusion I see no reason why the pediatrician may not place the average child in a superlative position for the orthodontist from the standpoint of growth and health. Together, possibly with the aid of the roentgenologist and endocrinologist, the all-important matter of "status of maturity" can be evolved satisfactorily.

I wish to express briefly but most gratefully my thanks to those pediatricians who have aided me in presenting a cross section of modern pediatric opinion on certain features of the orthodontic problem.

DE RENNE APARTMENTS

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MACROMAXILLARY AND MICROMANDIBULAR DEVELOPMENT

Case Report

Floyd E. Gibbin, D.D.S., Buffalo, N. Y.

THIS is a case of Class I, Type II, neutroclusion, bordering on Class II, distoclusion (before early loss of deciduous teeth and drifting), macromaxillary development with protruding widely spaced anterior teeth, micromandibular development with retruded anterior teeth.

History.—The patient, a girl, aged 13 years 3 months, height 5 feet 1 inch, weight 89 pounds (normal average, 101 pounds), was a mouth breather, with enlarged tonsils and atrophied adenoids. She had impaired mastication with digestive disturbances and a mild speech defect. Her health was fair, except for morbid consciousness of dentofacial deformity, a marked inferiority complex. An extreme incidence of caries caused early loss of the deciduous teeth. However, with time and care, the incidence of caries markedly decreased. The grandmother and mother of the patient had conspicuously large dental arches with resulting lack of harmony in the facial proportion.

Attributed Etiology.—The etiology was more or less obscure and was a combination of complicated factors. Most outstanding was the maternal family characteristic of large dental arches and a square overproportioned lower third of the face. Combined with this, the patient had teeth of shape and form like her father. The etiology was influenced by the extreme incidence of caries, causing early loss of decidous teeth, affecting the eruption of the succedaneous teeth, crowding of the maxillary left second premolar and mandibular right second premolar, and impacting of the mandibular left second premolar. The patient had a habit of contracting the lower lip and so pulling it into the space between the lingual surfaces of the maxillary anterior teeth and the labial surfaces of the mandibular anteriors as to cause pressure toward the lingual on the mandibular anterior teeth. Her lip was held in that position, then drawn outward, causing protrusion of the maxillary anterior teeth. Malocclusion allowed space so that the lower lip, with habit and with the tendency to follow the course of least resistance, had become enlarged and continuously rested in the space between the maxillary and mandibular incisors. So, the lip habit was a cause of malocclusion and a result of malocclusion. Malocclusion was further complicated by tongue habits. The patient frequently extended the tongue to moisten her lower lip. In so doing, she drew lower lip to the incisal margin of the mandibular incisors, and the frequent pressure helped to cause lingual inclination and drifting of these teeth. The early loss of deciduous teeth facilitated and caused an increase in the degree of distal drifting of the mandibular erupted succedaneous teeth due to the labial pressure. Also, she had the habit of holding the tongue in the roof of the mouth and in so doing, there was palatal pressure causing expansion of the maxillary posterior regions and a lingual pulling suc-

Read before The American Association of Orthodontists April 17 to 20, 1939, Kansas City, Mo.

tion force on the mandibular posterior teeth. Patient was a mouth breather, but in this case other etiological factors were dominant in causing the malocclusion; nevertheless the mandible was less developed than the maxilla, the maxillary

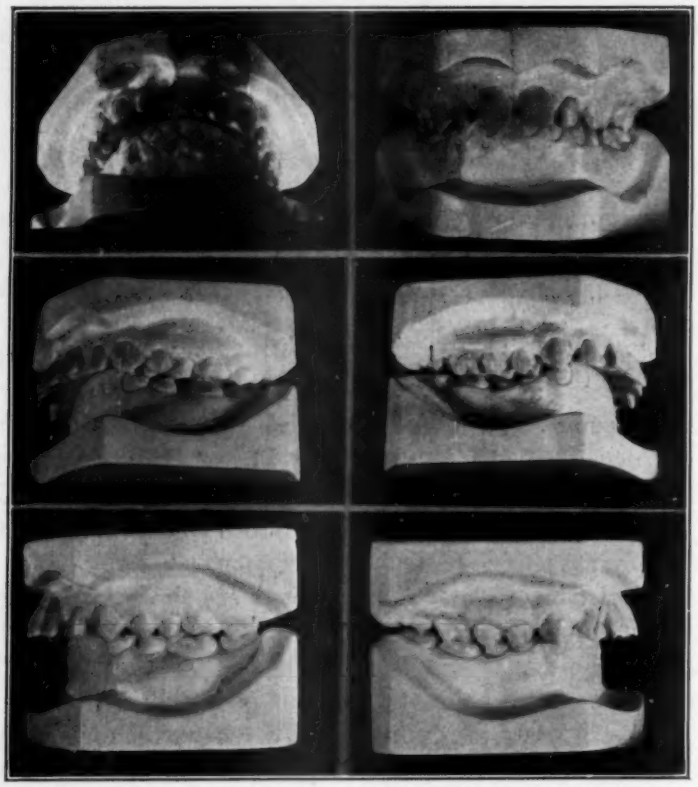


Fig. 1.

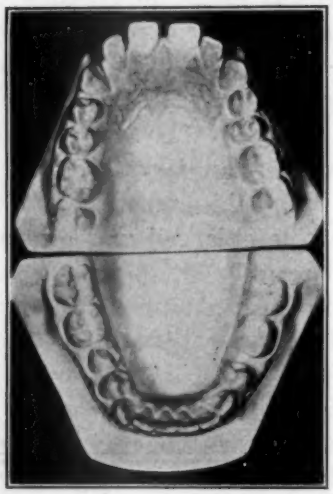


Fig. 2.

anterior teeth were in labioversion, and there was a tendency toward distoclusion. The etiology was considered as a combination of factors each contributing to the malocclusion.

Diagnosis.—Class I, Type II, neutroclusion, bordering on Class II, Division 1, distoclusion (before early loss of deciduous teeth and drifting). The left first molar relationship is neutral now. There had been a drifting so that the mandibular left second premolar is impacted; most of the left mandibular collapse had been a distal drifting of the teeth anterior to the impacted second premolar; but the molars had changed also. Therefore, before drifting, mandibular left first molar would have been distal to what it is now. According to Angle, a case is classified as Class II when the mandibular molar is distal to the maxillary molar to the extent of more than one-half of the width of one cusp. According to

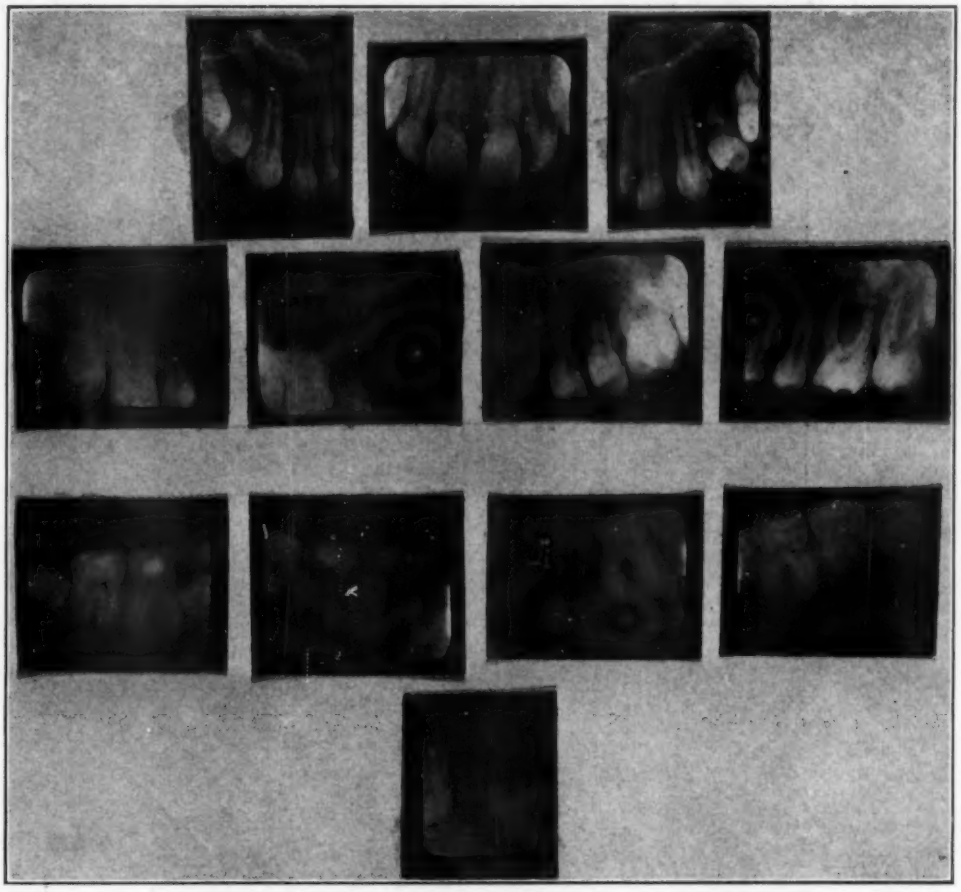


Fig. 3.

Dewey and Anderson, Class II represents the posterior relation of the mandibular dental arch to the maxillary arch by the mesiodistal width of half of the first molar or by the total mesiodistal width of a premolar. In this case the left side, before drifting, would have been distal, but not enough to be classified by the molar relationship as Class II. The right side was distal; the molar inclined planes were positioned at about half the cusp width distal to normal. Before drifting, as a result of early loss of deciduous teeth, the right side would have been more distal, but possibly not enough to be classified as Class II. According to McCoy, such a case may be judged by arch relationship rather than by molar relationship. Therefore, according to Angle, Dewey, and Anderson, this

is Class I, Type II, neutroclusion, with protruding maxillary anterior teeth; according to McCoy, considering arch relationship, this is Class II, Division 1, subdivision, unilateral distoclusion, with protruding maxillary anterior teeth. Other factors were: overdeveloped maxillary arch; underdeveloped mandibular arch; retruded mandibular anterior teeth; mandibular left second premolar impacted; lack of harmony between architectural lines and position of the denture and the skull; tongue and lower lip habits.

Treatment Therapy Employed.—In June, 1932, after consultation the patient was referred to her dentist for roentgenograms, prophylaxis, and examination. In July, 1932, roentgenographic diagnosis, impressions for record casts, and case analysis were made.

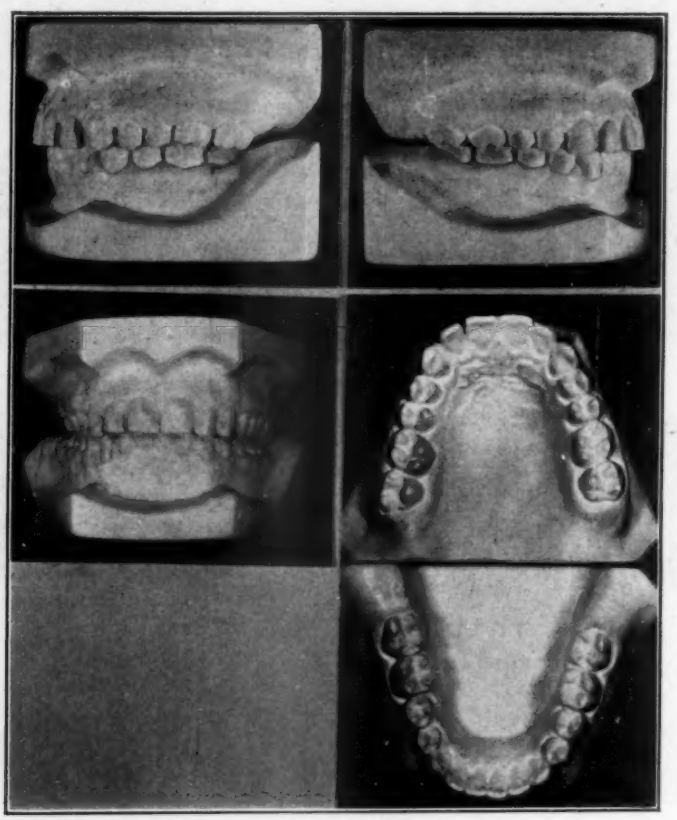


Fig. 4.

The tongue and lower lip habits were discussed with the patient and her parent. A mandibular fixed removable appliance (Pollock) was employed for lateral development; 0.022 auxiliary springs were used to move the right and left first premorals mesially; and an 0.020 auxiliary spring was employed to move the right second premolar buccally.

In August, 1932, tongue exercises were advised. The patient was instructed to flatten her tongue in the floor of her mouth and to place the apex against the lingual surfaces of the mandibular anterior teeth and to exert pressure against these teeth. The object was to assist in mandibular development, to develop

normal muscular tonicity, and to train the tongue to assume its normal position in the floor of the mouth, thus assisting in retention.

In October, 1932, a mandibular labial arch with coil springs was inserted and was ligated to move the incisor teeth labially.

In November, 1932, a maxillary fixed removable appliance (Pollock), designed to reduce the size of the maxillary arch, with 0.020 spring to move the left second premolar buccally, was inserted.

In December, 1932, a maxillary labial arch with coil springs was inserted. The patient was instructed to wear intermaxillary elastics.

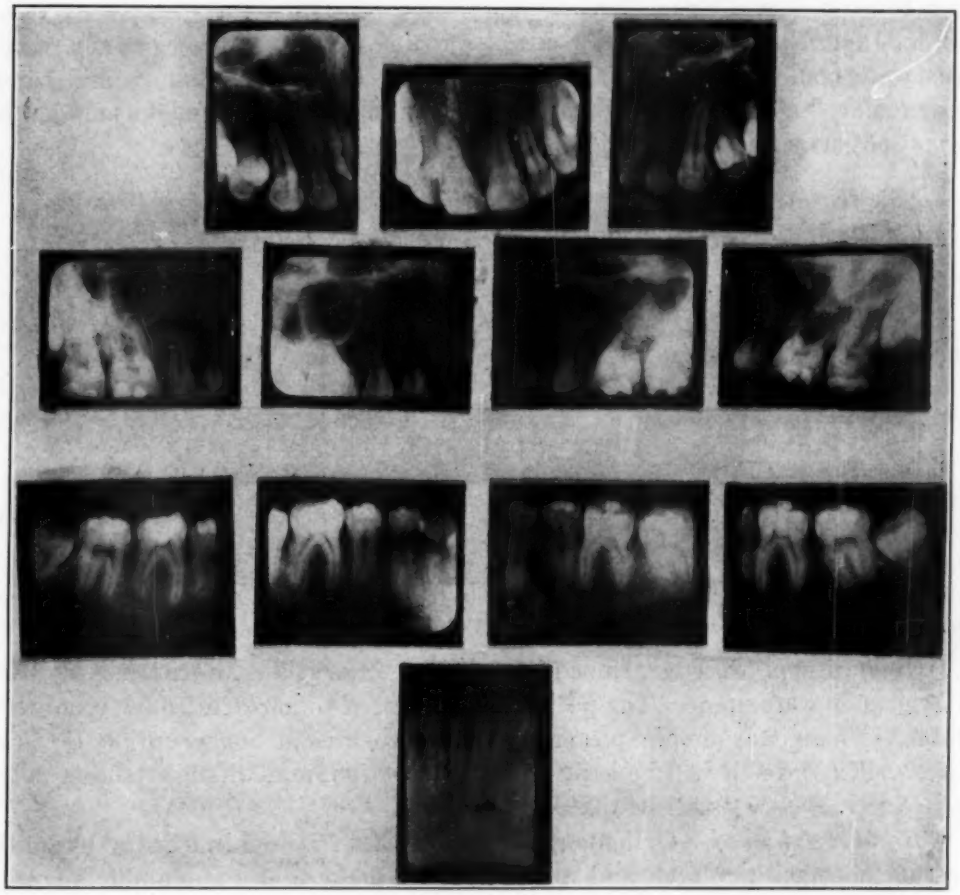


Fig. 5.

In February, 1933, an 0.020 labial auxiliary wire was soldered to maxillary labial arch as tilting spring to contour and reduce the size of the anterior portion of the maxillary arch.

In March, 1933, the mandibular appliance was rebuilt with a new labial arch to move the anterior teeth labially and to correct their axial inclination.

In May, 1933, the space between the lingual surfaces of the maxillary anterior teeth and the labial surfaces of the mandibular anterior teeth was reduced. Therefore, training exercises of the orbicularis oris and associated muscles were prescribed.

In June, 1933, a maxillary bite plane (Jackson type) to increase vertical height, with the labial arch, was constructed and placed. The use of intermaxillary elastics was continued.

In October, 1933, a mandibular soldered lingual arch was employed for arch contour retention. The impacted left second premolar now erupted to normal position.

In April, 1934, the patient was instructed to wear the maxillary labial arch and elastics at night only.

In October, 1934, the maxillary bite plane and the mandibular retainer were removed. A Hawley retainer was placed in the maxillary arch, with instructions to wear it at night only.

In June, 1935, the maxillary retainer was removed. Impressions for record casts were made. Throughout treatment of the case, all appliances and bands were removed every four months, and the patient was referred to her dentist for prophylaxis and examination.

Fig. 6.

Observations were continued at regular intervals. In November, 1938, photographs were made. The patient was referred to her dentist for roentgenograms. There was ample posterior arch development for eruption of third molars. These teeth will be kept under observation, and whatever action might be deemed necessary will be taken.

Results Achieved.—Orthodontic treatment has resulted in a reduction in the size of the maxillary arch and an increase in the size of the mandibular arch, with special reference in each case to the anterior portion. Sufficient space was provided for the positioning of the maxillary left second premolar and the mandibular right second premolar and for the eruption of the impacted mandibular left second premolar. The maxillary and mandibular anterior teeth have been moved and tilted to their normal axial inclination. The result is a normal relationship of the occlusal inclined planes of the teeth. The tongue has been controlled so that each group of intrinsic and extrinsic muscles has developed and acquired tone to exert normal rather than abnormal pressure, and it has been trained to occupy its proper position in the mouth. The orbicularis oris muscle has been trained for its individualistic actions of the deep fibers and the oblique fibers closely drawing the lips to the alveolar arch, while the superficial and

the decussating fibers bring the lips together and forward. Similarly, all of the muscles of the mouth and of the face are developed so that they may be definitely controlled by will. The patient has overcome the habit of mouth breathing. With the vast change in the anterior part of the arches from conspicuous, protruding, separated maxillary anterior teeth and retruded mandibular anterior alveolar section and teeth to normal, there has been a marked improvement to inconspicuous lower third of face and a pleasing attractive profile.

Prognosis.—The prognosis is favorable because a definite functional and anatomic relationship has been developed, and the forces of the inclined planes will act to hold the teeth in occlusion. The developed-to-normal and the normally used muscles directly related to mastication and expression help to assure the maintenance of occlusion. The attributed etiological factors have been counteracted, and the forces which cause the teeth to maintain their normal relations are interactive and dependent upon each other, thus influencing the favorable prognosis. Assuring this further is the fact that the teeth have held in that position perfectly for the four years since the retainers were removed.

OBSERVATIONS AND CONCLUSIONS

It is felt that results of far-reaching importance have been secured for this patient.

The correction of arch contour and arch relationship, together with the development of muscular tone and the acquired control of the tongue, has resulted in a marked improvement in articulation of sound and in phonetics.

The transition from malfunctional mastication to efficient functional mastication has been and will be reflected in an improved nutrition and general health. The patient's weight is now normal for her height and age.

With time and without treatment, the unequal distribution of occlusal forces would have undoubtedly resulted in periodontoclasia and early loss of teeth.

The lack of harmony in the size and form of the edentulous arches would have presented difficulty to the prosthodontist in constructing dentures that would be functionally and esthetically satisfactory.

The pretreatment consciousness of deformity and marked inferiority complex have been overcome and replaced by poise, self-confidence and sociability, which are so essential to success and to happiness in later life.

333 Linwood Avenue

CORRECTION OF BILATERAL LINGUAL OCCLUSION OF THE MANDIBULAR ARCH CAUSING EXTREME CLOSE-BITE

Case Report

Charles H. Girt, D.D.S., Pittsburgh, Pa.

Treatment Started.—Treatment of the patient, an 8-year-old girl, was begun January, 1935 (Fig. A *1-7*).

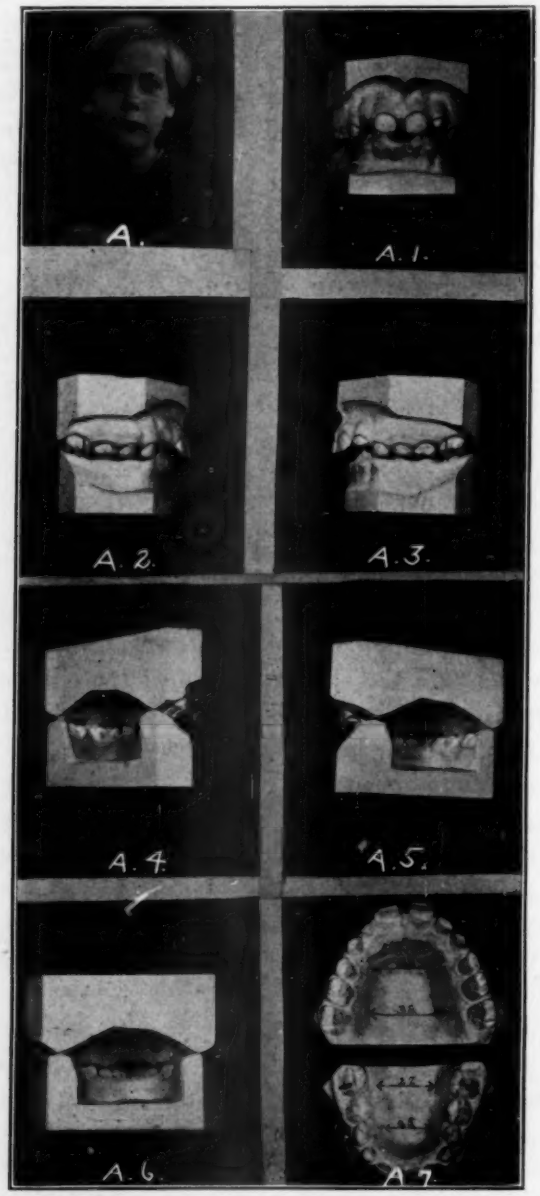
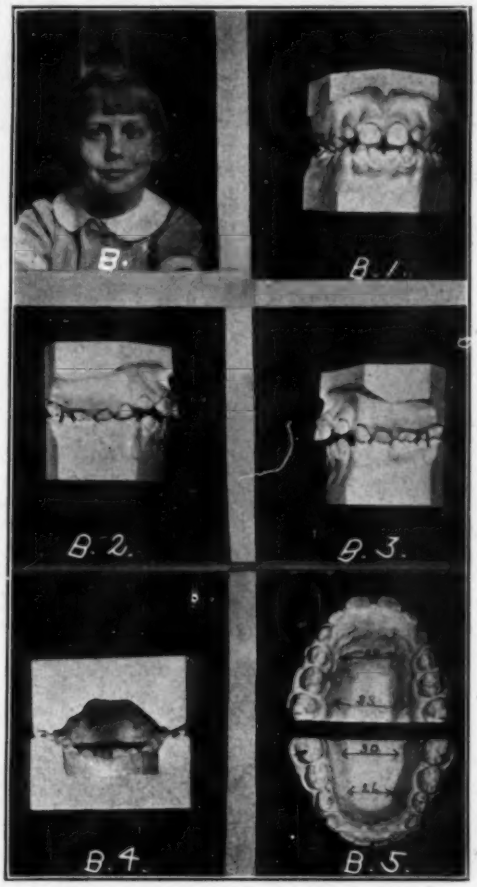


Fig. A.—Original photograph, note small mandibular development.
1, Shows extreme closed bite.
2, Shows right posterior relationship.
3, Shows left posterior relationship.
4, *5*, and *6*, Showing lingual aspect and abnormal arch harmony.
7, Shows arch measurement.
Upper: 33 and 38 mm.
Lower: 25 and 27 mm.

Read before the American Association of Orthodontists, Kansas City, Mo., April, 1939.

History and Etiology.—Her health was good at all times other than the normal childhood diseases, also good long bone growth. The cause of this malocclusion is believed to be a sleeping habit, namely, the use of either arm as a head support, preferably in the mandibular area. Routine x-ray checkups showed all permanent teeth present and in their favorable anteroposterior relationship. The closed bite can be clearly understood since the comparative arch sizes are so greatly out of proportion, with no tooth in the mandibular arch having direct occlusal relationship with its intended tooth in the maxillary arch.

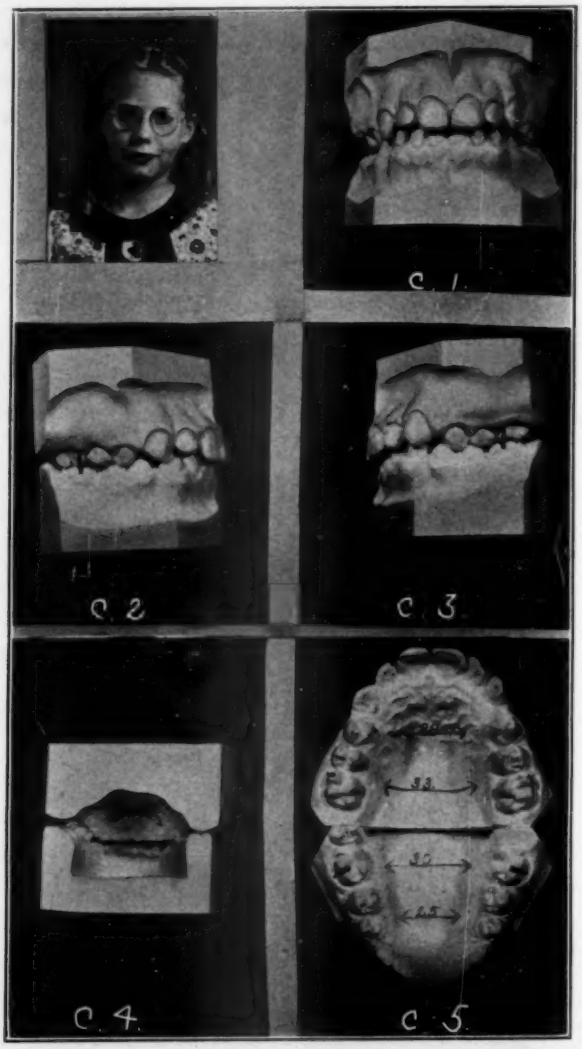


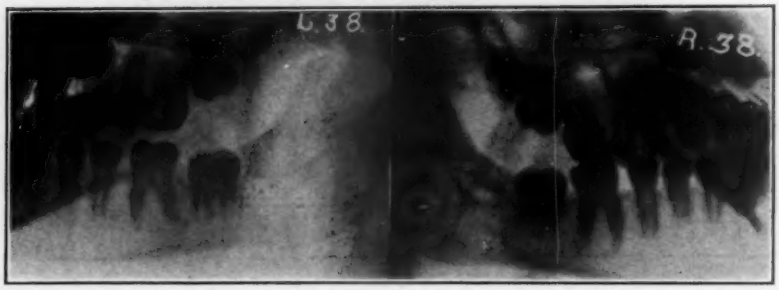
B.6

Fig. B.—Shows the facial change.

1, Shows the re-established bite.
2 and *3*, Show the established occlusal relationship.
4, Shows the arch relationship and size.
5, Shows improved arch measurements. Upper 29 and 33 mm. Lower 26 and 30 mm.
6, Lateral jaw x-rays.

Treatment Employed.—January, 1935, bands were constructed directly in the mouth for the four first permanent molars and the mandibular deciduous canines. A simple labial arch, 0.040 in size, with Oliver loop type locks was placed in buccal tubes, 0.042 in size, on the maxillary arch and a lingual arch,





C.6

Fig. C.—Shows facial photograph.

1, Shows anterior aspect.
2 and *3*, Show occlusal relationship.
4, Shows arch size and relationship.
5, Shows the arch relationship, remaining the same as in 1935.
6, Lateral jaw x-rays.

0.040 in size, was supported in horizontal round tubes, with inside measurement 0.042 to the mandibular molar bands. Lugs were placed on the mandibular deciduous canine bands to secure a more stabilized arch. The 0.042 buccal and lingual tubing was used to give a free movement to the arch adjustments. The maxillary labial arch was bent inward or constricted toward the center of the maxillary bones while the mandibular lingual arch was expanded to give a stimulating force for mandibular arch development. These adjustments were very carefully made and checked until October, 1935, a period of ten months of active treatment, when the relationship of the maxillary and mandibular arches was in a functional occlusion, and the bite was reasonably open. At this time, hand x-rays were made which showed a definite deficient bone center calcification. The patient was immediately referred to her physician for a general physical examination, the result of which showed a hypothyroid condition, –25 (Fig. B *1-6*).

The applied force was, therefore, discontinued at that time; the maxillary labial arch was made passive and used as a retainer; the mandibular appliances were removed and a vulcanite lingual Hawley retainer was placed and worn just at night. These retainers were allowed to remain for one year, being checked at frequent intervals. At this time, all appliances were removed since the period of deciduous tooth loss was at hand, as the child had now reached the age of 9 years, 8 months. The case progressed uneventfully until January, 1939, at which time check-up models and third molar x-rays were made. (Please note the time of deciduous transition is about two and one-half years, due mainly to the retarded calcific development.) Lateral jaw x-rays showed the favorable development of both twelve year molars and third molars (Fig. C *1-6*).

In closing this report, I do not intend it to be a closed or finished case; however, I do feel the child has been helped very much toward mouth health, since the arches have been placed in a more normal relationship for the child's future life. I feel the twelve year molars and also the third molars should come into the arch unmolested and that a regular lip exercise will continue to improve the lip muscle tone.

510 Medical Arts Building

CASE REPORT

JEROME H. TRIER, NEW YORK, N. Y.

THIS is a presentation of a compromise treatment of a case mutilated by the loss of permanent teeth.

History.—The patient, a male aged 14 years, presented upon examination the general history of having the usual disturbances of childhood, namely, measles and mumps. His tonsils and adenoids were removed at the age of 7 years.

Fig. 1.

Fig. 2.

Fig. 1.—Presents occlusal view of the maxillary and mandibular teeth before and after treatment.

Fig. 2.—Left view.

Fig. 3.—Frontal view of the case before and after treatment.

Oral examination revealed the absence of the maxillary right lateral and central incisors, and the left first molar, also the mandibular left lateral incisor.

The mandibular left second premolar and molar were buccal to the opposing maxillary teeth. The maxillary left canine was blocked out of the line of occlusion, due to insufficient room.

Presented before the New York Society of Orthodontists, March 14, 1939.

Radiographically, the supporting bone structure about the roots of the teeth showed no sign of any disturbance due to the loss of the teeth.

Classification.—Angle Class I mutilated. Therein we find an inadequacy of Angle's terminology so familiar to all of us. Simon offers us a more lucid classification, namely, posterior dental protraction.

Diagnosis.—The malformation, as presented, was due to the loss of permanent teeth.

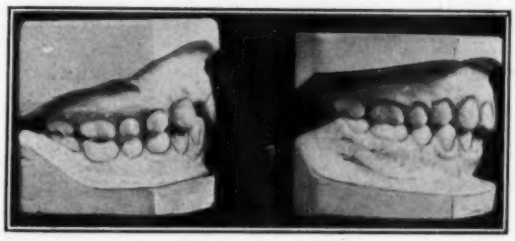


Fig. 4.—Right view.

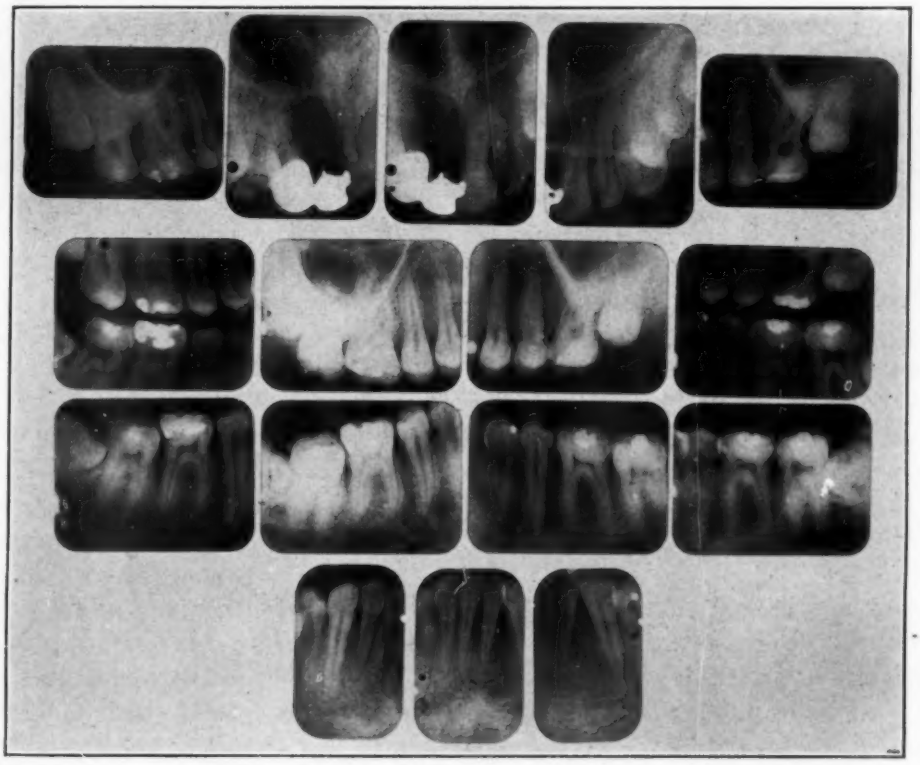


Fig. 5.—Radiographs of the completed case.

Prognosis was held to be good, after a study of the case.

Plan of Treatment.—Maxillary Arch: The axial inclination of the molars and premolars had to be changed, necessitating a distal movement of the crowns of the aforementioned teeth. The left second molar was to be rotated and brought into the anatomic position of the missing first molar.

Axial inclination of the right canine was accomplished, which brought this tooth in its correct relationship to the mandibular right canine and premolar.

This was important, inasmuch as the canine was to be used as an abutment. It was decided to replace only one of the two missing teeth, namely, the central incisor.

Mandibular Arch: The left first molar and second premolar were to be moved in a lingual position, and the space of the left lateral incisor closed.

Appliances Used.—Bands were cemented on the maxillary left second molar and right first molar, carrying a 6 mm. 19 gauge tube buccally, and half round tubes lingually, for labial and lingual appliances, to be used at the discretion of the operator.

The mandibular bands were made for the first molars, carrying half round tubes for a lingual appliance.

Triple X intermaxillary elastics were used.

993 Park Avenue

AMERICAN ASSOCIATION OF ORTHODONTISTS ESTABLISHES PUBLIC RELATIONS BUREAU

THE new Public Relations Bureau of the American Association of Orthodontists received its baptism June 5, when the subcommittee which is to act as a Board of Directors held its first meeting in New York City. President William A. Murray of Evanston, Ill., was officially present to bless the infant with his counsel and advice. The members of the subcommittee comprise the following: Frank Nicolai, Chairman; Norman L. Hillyer, Secretary; Henry U. Barber, Jr.; Joseph D. Eby; Sidney E. Reisner; J. A. Salzmann, and Leuman M. Waugh. All the members attended this meeting.

The foregoing committee, which will have direct and immediate charge of the work of the bureau, will be responsible to the Public Relations Committee of the Association, which will serve as an executive committee, comprised of: T. W. Sorrels, Chairman; George Barker; and Frank Nicolai. As the executive in direct charge of the execution of plans and projects, the committee employed Mr. Dwight Anderson, 2 East 103rd Street, New York, N. Y., who is director of the Public Relations Bureau of the Medical Society of the State of New York.

The first meeting of the subcommittee was devoted principally to organization matters and details of administration, together with discussion of immediate projects to get the work into the stage of action as soon as possible. Mr. Anderson was instructed to prepare, for the approval of the Public Relations Committee, the manuscript of a brief 4-page leaflet, "What Is Orthodontics?" This is to contain, in question and answer form, as much educational material as possible, so arranged as to be printed at small cost for wide distribution.

The work of the Public Relations Bureau has been undertaken pursuant to action taken by the Board of Directors of the American Association of Orthodontists passed at the annual meeting at Kansas City. During the discussions of the possibilities at that meeting, a number of suggestions received favorable consideration. A tentative plan was proposed "for professional and popular education as to the aims and ideals of orthodontics, subject to modification as its execution progresses."

Quoting further from the tentative plan: "At the inception of pioneer work of this sort the order of the execution of plans often depends on the development of contacts, their varying responses, the delays incident to overcoming resistance, and other factors which render difficult the making in advance of a specific schedule of activities in chronologic order. We are now thinking in terms of a long-term, cumulative effort over a period of years, with the first year devoted primarily to building a sound foundation.

"In every community a few leaders mold public opinion. In matters of professional service these leaders are numbered among the professional groups and the liaison groups identified with various aspects of voluntary and public health activities. At the outset of the public relations work plans should be made for effective education of such groups as those enumerated below, who already have a native interest in the subject and also are in key positions to influence the general public.

"1. *Medical Field.*—

(a) General practitioners
(b) Pediatricians
(c) Otolaryngologists
(d) Nurses
(e) Medical schools (fourth year)
(f) Public health students
(g) Editors of medical journals
(h) Nurses training schools

"2. *Dental Field.*—

(a) General practitioners
(b) Dental schools (fourth year)
(c) Dental hygienists through their schools and societies
(d) Editors of dental journals

"3. *Public Health Field.*—

(a) Health officers (direct, and through the American Public Health Association)
(b) Public health nurses (direct, and through American Public Health Association and nursing organizations)
(c) Nutritionists
(d) Voluntary health associations such as National Committee for Mental Hygiene

"4. *Public School Field.*—

(a) School administration authorities
(b) School physicians and nurses
(c) Health teaching supervisors (who instruct the teachers how to integrate health knowledge with regular school courses)
(d) Parent-Teacher associations
(e) Child psychologists and vocational advisors

"5. *Public Press and Radio Field (Newspapers and Popular Magazines).*—

(a) To assemble and release suitable material obtained from reliable sources of supply
(b) Provide articles for popular magazines (Bureau will serve as a clearing house for contributions)

"6. *Private School Field (Special Preparation).*"

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Edited by

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HEREDITARY EPIDERMOID CYST OF THE JAWS

FLOYD E. STRAITH, D.D.S., DETROIT, MICH.

CYSTS of the jaws are much more numerous than current literature would indicate, particularly the median or anterior maxillary cysts and cysts of the incisive canal. Dentigerous or follicular cysts are less frequent. Whether or not these may exist without containing definite elements of tooth substance, as Scudder suggests, is open to debate.

With more extensive research, we may find that the apparently different types of jaw cysts are simple variations arising from one original type of cellular anlage.

The theory of Malassez, attributing cystic formation in the jaws to growth of epithelial rests, is becoming more generally accepted, but on such a basis, it is difficult to reconcile the pathologic variations of certain cysts. However, in consideration of the principle that such cysts arise from epithelial debris or rests, the following case reports will carry the theory another step; that is, into the hereditary stage.

Familial or hereditary cysts of the jaws, as reported in the literature, are few and far between, but this genetic series clearly demonstrates, both clinically and pathologically, that such possibilities may be actualities.

The reticence of each individual of the following cases to submit to operation, while acting to their own disadvantage, has provided an opportunity to study the formation of the cysts, the rate of growth, and the speed of bone regeneration following the removal of the cysts.

CASE 1 (Mother).—Mrs. M. S., aged 46 years, was a white, American married woman.

Family History.—Her father had had multiple growths on his face and the back of his neck; he had been treated by dermatologists. He died at the age of 64 years, of epithelioma of the back of the neck. He had one brother who died at the age of 55 years of an unknown cause and one sister (twin) who died in 1937 at the age of 70 years and one sister (twin) who died in infancy.

Her mother was one of five brothers and two sisters. All brothers died in old age, and one sister is still living.

Patient's Past History.—She was a twin; her twin brother was living. She had the usual childhood diseases. When about 16 years of age, she had a swelling of the chin which was lanced intraorally. In August, 1915, a

carious mandibular left molar was removed. Subsequently, there was considerable discharge from the cavity into the mouth. Shortly afterward, a swelling developed over the mental area of the mandible, which was incised. Pain during mastication persisted.

Diagnosis.—Necrosis and osteomyelitis of left mandible were found. The patient was operated on at Harper Hospital by Dr. G. on Sept. 29, 1915. The mandibular left third molar was removed; iodoform pack was used. The patient was discharged on Oct. 2, 1915 (from hospital record, no x-ray examination made).

Delivery Record (daughter, from hospital record, April 4, 1924).—Patient, aged 36 years, has one child living, age 7½ years. She has had no miscarriages and a normal previous delivery. Her pregnancy to date was normal with a normal delivery and normal healthy child, 8 pounds 12 ounces. Patient was discharged April 9, 1924; her Wassermann was negative and urine was amber, cloudy, acid sp. gr. 1.024, no albumin, no sugar. The patient had skin moles or growths, slightly pigmented, which appeared on the face and back at about 35 years of age. She had had x-ray and electrical cauterization by a dermatologist for removal (mother, Fig. 1). Subsequently, she had a mandibular left impacted canine removed. No cyst was noted.

Mother, Fig. 1.—Showing multiple skin growths and old scars following removal of similar growths.

In 1921, all the remaining maxillary teeth were removed, and a cyst was found in the canine region. An impacted maxillary left canine was removed some time between 1921 and 1927. In 1927, five mandibular anterior teeth were removed, and a cyst was discovered in the median line. The patient thought this had healed but later the area swelled again. At this time, the mandibular left second premolar was removed, and a cyst was discovered about this tooth. The patient states that all of the permanent teeth erupted without incident as far as she could remember, except the impactions mentioned.

Present Complaint.—April 16, 1929—swelling over left side of the mandible and pus from gingivae appeared.

Present Examination.—Examination of the mouth revealed a bulging of the edentulous mandible in left premolar region, with some fluctuation and crackling upon pressure over the buccal plate. A small fistula at the crest of the ridge in the first molar region was discharging pus. Patient complained of only occasional pain.

X-ray examination revealed a large circumscribed area in the left ascending ramus of the mandible, extending up to the sigmoid notch and involving nearly all of the ascending ramus. The anterior border, with the exception of the external oblique line, appeared to be destroyed.

No tooth or tooth substance was evident within the area. In the left premolar region and the first molar area, there appeared two areas of rarefaction. The area in the first premolar region measured about 1½ cm. in diameter and was circular and definitely walled off. The other area was situated in the first molar region and was elliptical in shape, measuring approximately 2½ × 1½ cm. This rarefaction also was walled off with its anterior border overlapping the posterior border of the rarefaction anterior to it (mother, Fig. 2*A*).

A small circular area of rarefaction in the mandibular right third molar region at the alveolar border was noted. This area measured about ½ cm. in diameter (mother, Fig. 2*B*). Numerous circumscribed areas of rarefaction were noted in the maxillary alveolar ridge, averaging ½ cm. in diameter.

Clinical Diagnosis revealed multiple cysts of the mandible and maxilla.

Operative Record.—April 18, 1929.—Under conduction anesthesia, incision was made over the buccal surface of the alveolar ridge of the left mandible from canine to third molar region; the mucosa and periosteum were reflected, and the cortical plate was found to be thin and bulging. The buccal plate was shelled off, revealing a thin cystic membrane. Enlargement of this window showed two distinct cystic areas with no bone separating the separate cystic membranes. The membranes were shelled out following rupture of the sacs. The contents were cheesy or caseous with a slight amount of thin amber-colored fluid. No solid material or hair was found. The soft tissues were folded into the cavity, and the space was packed with vaselined iodoform gauze. The packing was changed frequently until granulations had formed, and filling of the cystic area was rapid.

Pathologic Report.—April 23, 1929.—"Cyst lined with squamous epithelium; dentigerous cyst."—P. F. M. No mention is made in the pathologic report as to whether or not any epithelial debris, islands, or daughter cysts were revealed.

May 10, 1929.—Under novocain conduction and infiltration anesthesia, the numerous small cystic areas of the maxilla were opened, and the cystic membranes curetted out with the cystic contents of the same type as found in the mandible. These areas were closed and allowed to heal by first intention. No pathologic study was made of these cysts.

May 24, 1929.—The cystic area in left ascending ramus was opened under conduction anesthesia. Cystic membrane was dissected out. Contents were caseous. The mandibular nerve and vessels were found to be lying outside of the cystic membrane and could be lifted up from the bony wall for their

entire course to the anterior border of the cystic area. The cavity was packed with vaselined iodoform gauze which was changed until granulations had provided a new bone covering. Anesthesia of the area supplied by the nerve, persisted for several months.

March 27, 1931.—Checkup x-ray films revealed good bone filling of the old cystic areas of the left mandible (mother, Fig. 3*A*). Films of the right mandible disclosed the small area of rarefaction in the third molor region extending downward from the alveolar border 1½ cm. and 7 or 8 mm. mesiodistally (mother, Fig. 3*B*). The patient was advised as to the necessity of frequent x-ray examinations.

Feb. 22, 1934.—Films taken on this date revealed a small cystic area in the left ascending ramus just below the base of the coronoid process and another smaller area in the first molar region (mother, Fig. 4*A*). The previously noted area at the angle of the right mandible was not clearly revealed (mother, Fig. 4*B*).

June 20, 1936.—While in the office for treatment of son, patient remarked on a swelling in the mouth which interfered with her lower denture in the mandibular right molar region. Examination of the mouth disclosed a prominent bulging of the soft tissues in the mandibular right third molar area, rounded and distended, slightly bluish in color. The mass was soft and fluctuant and extended up the anterior border of the ascending ramus.

X-ray examination revealed a large circumscribed destruction of the angle and ascending ramus of the right side of the mandible with complete loss of the cortical layer, superiorly, and less than a millimeter of bone remaining at the inferior border. The area measured 3 cm. anteroposteriorly and 3½ cm. from its lowest to its most superior limits (mother, Fig. 5*B*). The cystic areas in the body and ascending ramus of the left side were revealed as slightly larger (mother, Fig. 5*A*).

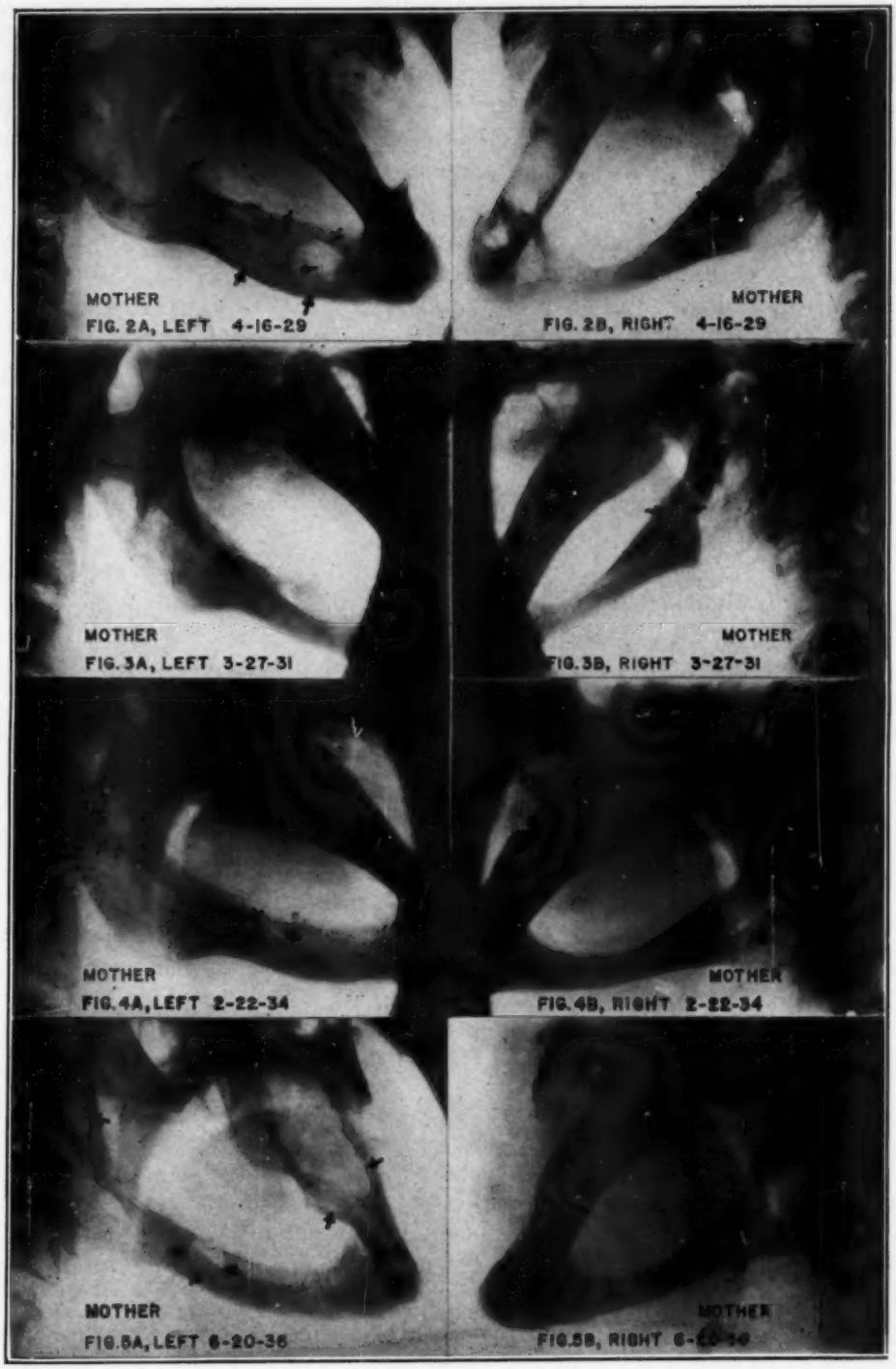
Removal of the cyst in the mandibular right angle was advised, but patient was reticent to submit to operation at that time. X-ray treatment and radium treatment were suggested to which the patient submitted. Treatment was given over a period of two years by Dr. Leucutia of Harper Hospital with no apparent change in the dimensions of the bone cavity. The protuberance of the soft tissues over the area was lessened (Sept. 30, 1936).

Nov. 27, 1936.—Films showed an enlargement of the cystic outline in the right angle of the mandible with definite bulging of the inferior border of the mandible (mother, Fig. 6*B*). The areas in the body and ascending ramus on the left side were approximately the same (mother, Fig. 6*A*).

March 1, 1937.—On examination of the mouth, the soft tissue bulging into the mouth in the mandibular right third molar area was noticeably lessened.

May 14, 1937.—Films (thoughtlessly exposed with the patient's dentures in the mouth) showed no appreciable change in the cystic outlines (mother, Figs. 7*A*, 7*B*).

Aug. 10, 1937.—Films of the areas revealed no apparent change. They did reveal the anterior soft tissue outline of the cyst in the right angle showing it to be about the size and shape of a large English walnut (mother, Figs. 8*A*, 8*B*).



Mother, Figs. 2*A* to 5*B*: 2*A*, Large cyst of left ramus and two cysts of body of left mandible. Two small cysts of the maxilla are shown. 2*B*, Beginning circumscribed rarefaction in right angle of mandible. 3*A*, Bone regeneration, two years following removal of cysts of left mandible. 3*B*, Showing increase in size of area in right angle. 4*A*, Revealing the development of one or possibly two new cysts at base of left coronoid process and one in molar region. 4*B*, The area in the right angle has doubled in size. 5*A*, Slight increase in size of the cyst in the left molar region is noted. The expansive character of the cyst in the right angle is clearly shown. 5*B*, Cyst of right angle has enlarged to involve the ascending ramus and the lower border.

Feb. 26, 1938.—Films at this time revealed a tendency to lobulation of the buccal wall of the cyst in the right mandible with a prominent trabeculum extending upward, midway of its mesiodistal diameter (mother, Figs. 9*A*, 9*B*). Small films of the maxilla revealed another small cystic area in the maxillary left premolar region. Aspiration of the cystic area in the mandibular right revealed a thick caseous content. Operation was advised.

Operative Record.—May 6, 1938.—Under 2 per cent novocain and adrenalin conduction anesthesia, incision was made intraorally, high on the anterior border of the ascending ramus of the right mandible and extending downward and forward over the crest of the alveolar ridge to the premolar region. Care was taken to try to dissect each layer of tissue down to the cyst lining and this was partially successful. On attempting to free the cyst membrane from about the sharp trabeculum on the buccal, the cyst ruptured discharging a thick, cheesy, whitish to yellow caseous mass. No solid areas were found in the contents, nor hair or evidences of tooth substance. Upon dissection from above downward, the mandibular vessels and nerve were found adherent to the posterior and inferior wall of the cyst, and were freed.

The vessels appeared to be collapsed and atrophic. After complete removal of the cyst membrane, the vessels and nerve lay loose in the floor of the bone cavity for a distance of 1½ inches. The bony irregularities were smoothed and the cavity packed with vaselined iodoform gauze. Packings were changed weekly for three weeks, granulations forming rapidly. Two months following the operation, the cavity was filled to within one quarter inch of the surface. Anesthesia of the lower lip and chin was present, but signs of regeneration were noted two months after operation. The sensory nerve function of the lip area was rapidly recovered but anesthesia in the chin portion persisted.

Pathologic Report.—May 11, 1938.—The tissue is lined largely by well-formed squamous epithelium. Small areas of epithelial erosion and granulation tissue formation are present. The wall of the cyst is made up of dense connective tissue, showing only scattered round cells throughout.

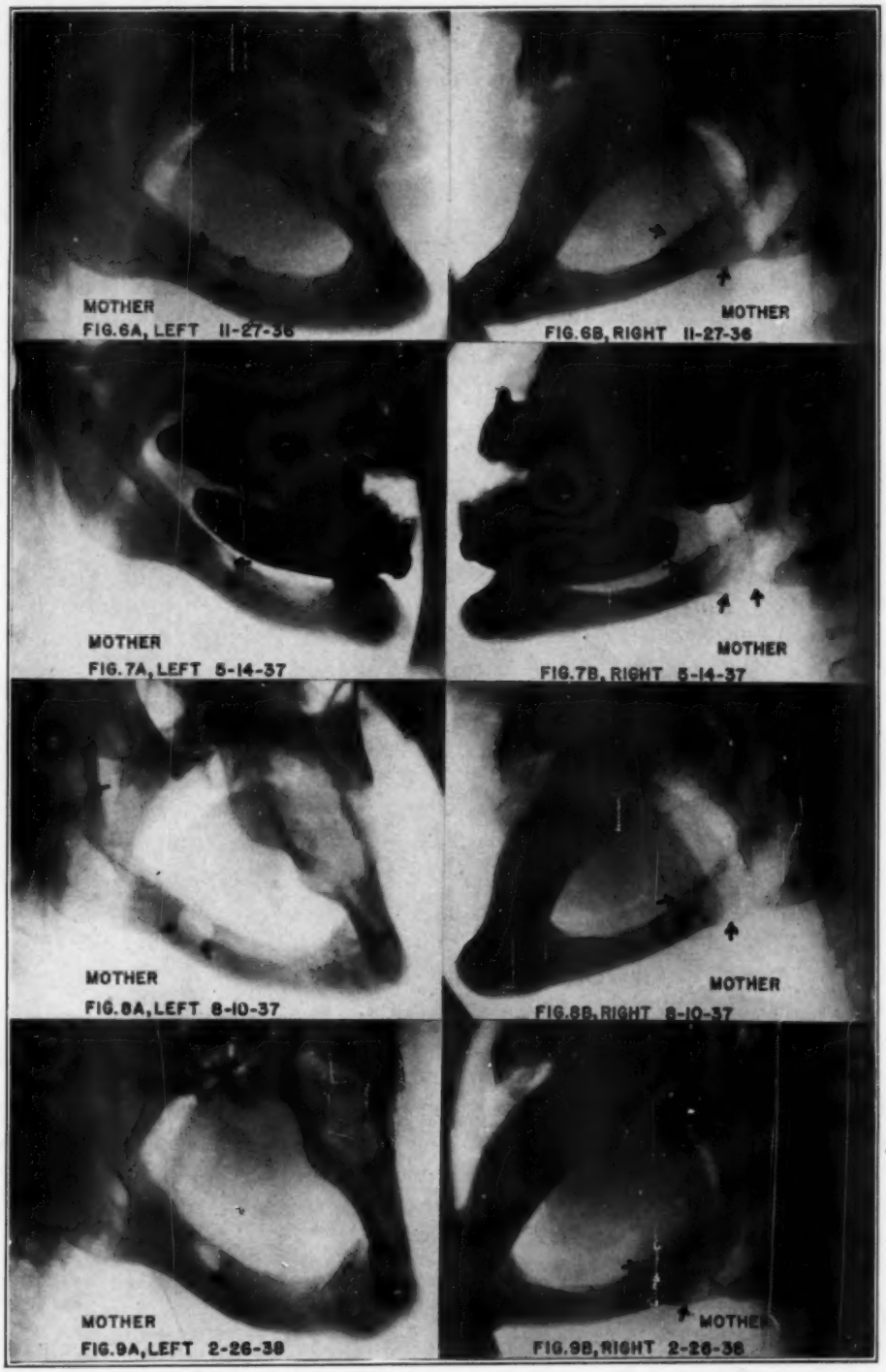
Diagnosis was epidermoid cyst.

Nov. 15, 1938.—During examination, patient mentioned the fact that she also had a large soft mass on her left leg over the anterior border of the tibia just below the patella. Examination of this mass revealed it to be fluctuant, subepithelial and measuring approximately 7 cm. by 5 cm. The mass was freely movable beneath the skin and over the underlying tissues. She also mentioned at this time that she had a smaller similar mass on her back. These masses have been present for a number of years, and appear definitely cystic in character.

Present Status.—Three small cystic areas remain: one in the ascending ramus and one in the body of the mandible on the left side; and one in the premolar area on the left of the maxilla.

Case 2.—M. S., Jr., a white, American male, aged 16 years, was the son of patient in Case 1.

Family History.—The father's history was irrelevant; he was living, was in good health, and had had no illnesses or operations.



Mother, Figs. 6*A* to 9*B*: 6*A*, No particular change is noted in the cysts of the left mandible. Increased calcification in old areas. 6*B*, Increased expansion and a tendency to lobulation and trabeculation are noted in the bone wall of the cyst of the right angle. Expansion of lower border. 7*A*, No change. 7*B*, Increased lobulation, expansion, and trabeculation in bone walls of cyst in right angle. 8*A*, No change. 8*B*, Progressively increased trabeculation and lobulation but no apparent increase in size of cyst in right angle. 9*A*, No change. 9*B*, Heavy trabeculation and lobulation. The distorted course of the mandibular nerve and vessels can be seen at extreme lower border of cystic area.

The history of his mother is given in Case 1 and that of one sister in Case 3.

Patient's History.—He had had the usual childhood diseases and no serious illnesses.

Present Complaint.—A swelling of the left side of the face over the cheek and "cheek bone" appeared. This was first noticed a few weeks ago. Patient had had no complaint of pain in the area, but believed the swelling was slowly increasing. Breathing through left side of nose seemed difficult. When he pressed the area over the "cheek bone" and beneath his left eye, he could feel it "give" and could feel this sensation in his nose and palate. No discharge of fluid from the area had been noticed. No injury to the area was recalled.

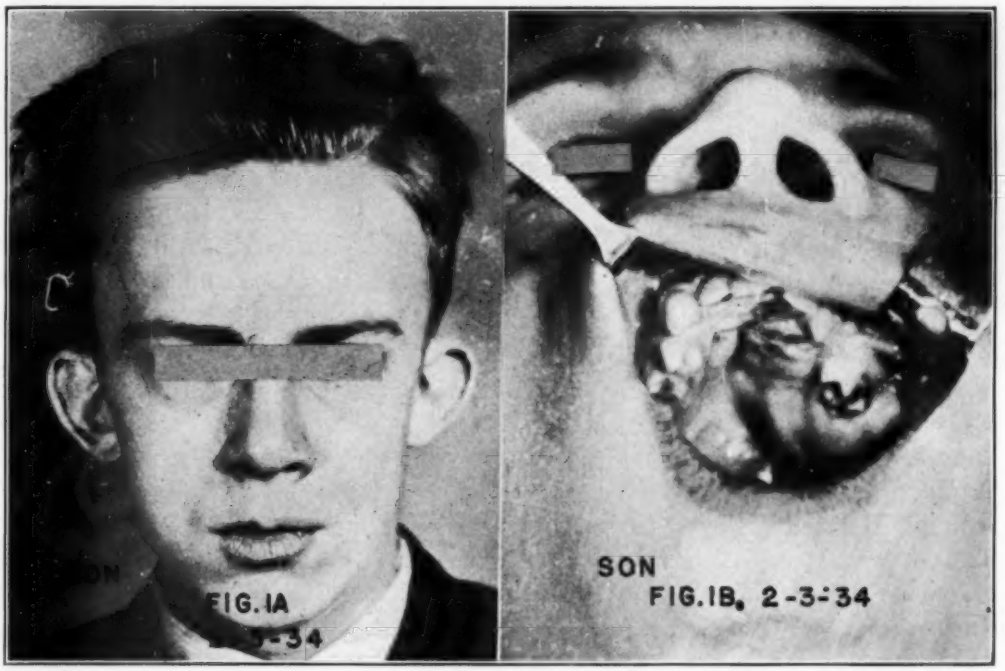
Examination.—Examination revealed a rather tall (5′8″) pale, thin boy, weighing approximately 140 pounds. The skull was particularly prominent in the frontal and parietal regions, suggesting a "Paget's" type with a high vertical forehead, with prominent frontal and temporal regions. There was a pronounced enlargement of the left side of the face over the infraorbital and malar areas. Palpation of this swelling elicited a definite deep fluctuation but no pain. A small rounded cyst was noted on the mucous membrane of the left side of the lower lip about 3 mm. in diameter (son, Fig. 1*A*). The skin over the area was normal in texture, as compared with the opposite side (son, Fig. 1*A*).

Examination of the mouth showed a marked downward swelling of the palate on the left, extending past the midline and from the junction of the hard and soft palates anteriorly to the incisor region (son, Fig. 1*B*). The buccal sulcus was practically obliterated by a swelling of the mucous membrane, extending laterally toward the cheek, and the usual conformation of the malar attachment was broadened and flattened. The maxillary left canine, second premolar, first and third molars were missing. The second molar was malposed. Palpation upon the external and palatal swellings disclosed simultaneous fluctuation and continuity. Further oral examination showed the three mandibular right molars missing and also the mandibular left second and third molars, and the maxillary right second and third molars. Digital examination of the ridge over the mandibular right molar area gave a sense of bulging of the buccal plate of the mandible and some fluctuation. Aspiration of the area in the left side of the maxilla produced an amber fluid mixed with chunks of caseous material.

Roentgenologic Findings.—Lateral and dental films disclosed a massive circumscribed rarefaction of the left side of the maxilla, involving the malar process, palate bone, extending superiorly to the orbit, posteriorly to the pterygoid plates, medially to the nasal septum, laterally into the malar, and inferiorly to the gingival line. Within the area of destruction the missing canine tooth was revealed in a vertical position midway of the left nasal cavity. The first molar was located above and between the malposed second molar and first premolar, the second premolar laterally in the malar bone with the crown directed inward, the third molar with its roots laterally and the

crown directed palatally and slightly downward. All normal bony landmarks of the left maxillary sinus were lost (son, Figs. 2*B*, 2*C*).

The films of the left mandible revealed a large circumscribed area of bone rarefaction involving nearly all of the ascending ramus and the angle of the mandible anteriorly to the first molar. At the upper margin of this rarefaction the crown portion of the third molar was located in the anterior border of the ascending ramus, just below the level of the sigmoid notch, the occlusal surface directed downward. The second molar was deep within the limits of the body of the mandible, its crown directed upward and slightly anteriorly. The occlusal surface was nearly a centimeter below the normal gingival line and the apex of the roots two millimeters from the inferior border of the mandible (son, Fig. 2*A*).



Son, Figs. 1*A* and 1*B*: 1*A*, Slight prominence of face over left malar and infraorbital region and also over right angle of mandible may be seen. 1*B*, Convexity of left side of palate and increased thickness of alveolar ridge are clearly revealed.

The films of the right mandible disclosed a third large area of bone destruction. This area was also clearly outlined with even bony margins and contained a molar tooth lying totally within the area of rarefaction at the angle of the mandible. The tooth was vertical, its crown pointing upward and the root ends within two millimeters of the lower border of the jaw. The area involved all of the ascending ramus up to the sigmoid notch, and anteriorly in the body of the mandible to the premolars. The outline of the cortical layer was lost superiorly in the second molar region, and little or no thickness was revealed at the lower border (son, Fig. 2*D*). No portion or suggestion of the missing third molar was revealed.

Clinical diagnosis was multiple dentigerous (follicular) cysts of the jaws.

At this stage because of the history of multiple skin growths on the face and back of Mrs. S., the mother (Case 1), and also the grandfather; a history of a thyroidectomy and parathyroidectomy in the sister of Mrs. S. (Case 1), multiple bone cysts in both mother (Case 1) and son (Case 2), the possibility of a glandular disturbance was considered. The mother, son, and daughter (Case 3) were referred to their physician, Dr. Robert C. Moehlig, for blood calcium and phosphorus studies.

This was determined for the son and daughter, but not for the mother. The results were:

Feb. 5, 1934, M. S., Jr. (Case 2).—Blood phosphorus content—3.1 mg. to 100 c.c. of plasma. Blood calcium content—8.2 mg. to 100 c.c. of serum.

Feb. 24, 1936.—Blood calcium content—10 mg. to 100 c.c. of serum.

Feb. 24, 1936, M. S. (Case 3).—Blood calcium content—8.6 mg. to 100 c.c. of serum.

Operative Record.—Feb. 15, 1934, under conduction and infiltration anesthesia (novocain 2 per cent) an incision through the labial and buccal mucosa of the left maxilla was made horizontally from the midline to the tuberosity, a centimeter above the gingival line. The mucosa and periosteum reflected, revealing the cyst wall in the molar region. Anteriorly there was a thin parchment-like shell of bone bulging anteriorly and covering the cyst as far as the lateral incisor. The shell-like bone was removed, and the cyst wall incised. A large amount of pale yellow thick caseous material was evacuated. No hair, supernumerary, or rudimentary teeth were found.

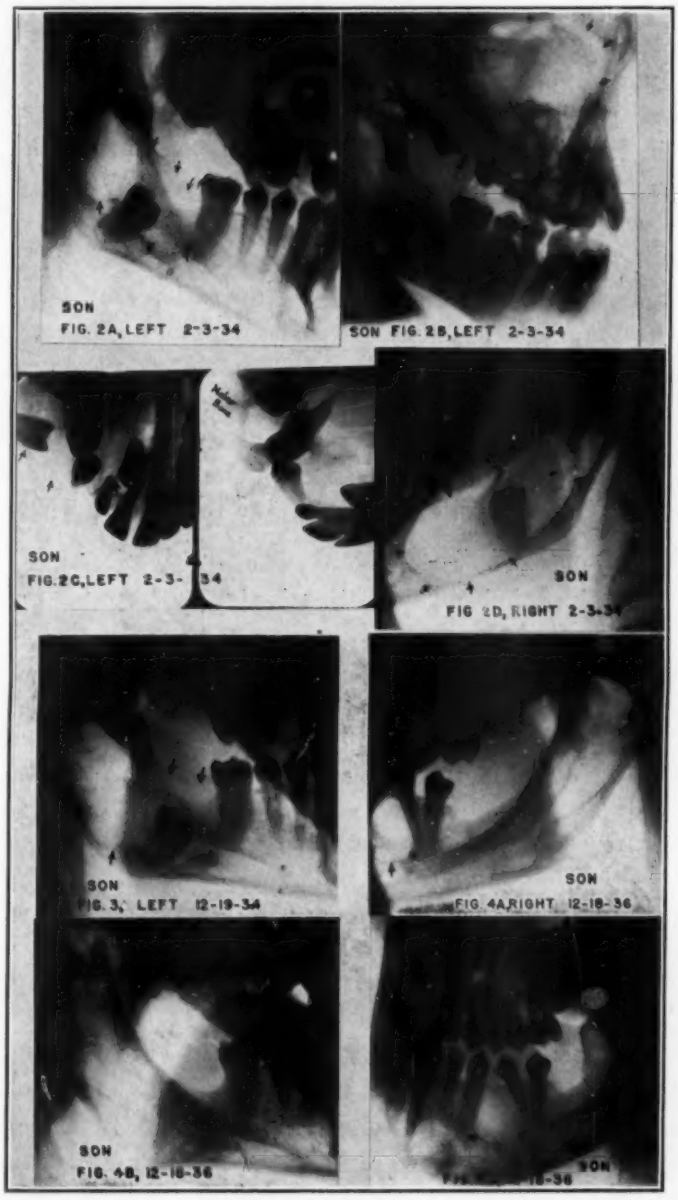
The malposed, impacted first molar was removed first. The encysted third molar and second premolar were elevated from their buccal position. The canine was then removed from its position midway of the left nasal cavity. A large portion of inner bone wall of the cyst was removed from the area beneath the left inferior turbinate, creating a large window into the nose. The inferior turbinate was atrophic and displaced medially and upward, and the nasal septum deviated to the right side. The cystic membrane was peeled and curetted out, and the intraoral opening closed and sutured, leaving a small opening for irrigation. The antral-cyst cavity was irrigated frequently for one month when the opening into the mouth closed spontaneously. The external facial prominence over the left maxilla rapidly diminished to normal contour, and better airway through the right side of nose was noticed by the patient.

Pathology.—No pathologic microscopic tissue study was made. Considering the apparent hereditary tendency to cystic development, the mother was requested to bring the daughter in for examination, which was done on Feb. 22, 1934 (see Case 3).

March 15, 1934, an operation for the enucleation of the cyst of the right mandible and removal of the enclosed molar was performed (anesthesia novocain 2 per cent). Removal was made through an incision through the mucosa and periosteum overlying the anterior border of the ascending ramus and over the buccal aspect of the posterior alveolar ridge anteriorly to the canine region. The cyst was enucleated, and the unerupted molar was removed, care

being taken to avoid trauma about the root of the second premolar. The cavity was packed with vaselined iodoform gauze, and the packing was changed weekly for two months, by which time sufficient filling of the defect had taken place.

March 3, 1934.—X-ray studies of the radius and ulna of both arms revealed no abnormalities.



Son, Figs. 2*A* to 4*C*: 2*A*, Cyst of left ascending ramus and angle with second molar suppressed and crown of third molar inverted in anterior border of ascending ramus. 2*B*, General outline of cyst of left maxilla is shown. 2*C*, Occlusal films of cyst of left maxilla, showing marked displacement of teeth, the canine being pushed toward the nasal septum and one premolar in the malar bone. 2*D*, Cyst of right mandible containing the second molar. No evidence of the third molar. 3, Further expansion of the cyst of the left mandible and forward displacement of the enclosed molar is shown. 4*A*, Checkup film of right mandible following removal of cyst shows good bone regeneration but reveals a new cyst between the canine and premolar. 4*B*, Shows good bone regeneration following removal of cyst and involved teeth of left angle and ramus. 4*C*, More clearly reveals new cyst formation of right mandible.

Aug. 27, 1934.—A lateral film of the left mandible revealed no appreciable change in the cyst area.

Dec. 19, 1934.—Another film made of the cyst of the left mandible showed more bone destruction distal of the first molar (son, Fig. 3).

Jan. 19, 1935.—Detailed roentgenologic study of the skull was made at Harper Hospital.

"Films were taken of the skull stereoscopically in a left lateral direction and additional study was made in posteroanterior direction. There is noted a somewhat hydrocephalic type skull with some areas of calcification, which stereoscopically are shown to be either in the dura or covering the cerebral convolutions in the left parietal region near the vertex of the skull. Such changes are seen following intracranial hemorrhages, and there was also noted in the anteroposterior film a rather extensive calcification of the falc cerebri." —L. Reynolds.

Operative Record.—June 14, 1935.—An operation for the removal of the cyst of the left mandible and unerupted second and third molars was performed. The method of operation was the same as for the cyst of the right mandible, and the cavity was packed with vaselined iodoform gauze. The packing was changed weekly for two months at which time granulations had progressed sufficiently to permit the discontinuance of the packing. The cyst lining was sent to Wayne College of Medicine for examination.

Microscopic Examination.—

1. "The tissue included in this section is stratified epithelium, subepithelial stroma, arranged so that the stratified epithelium has an enclosed area which is partly filled with fragmented or exfoliated stratified epithelium. The subepithelium shows some degenerative changes and slight inflammatory reaction in places. The stromal cells close to the stratified epithelium are compressed and show atrophy and hyalinization. The enclosures by the stratified epithelium are multiple in number.

2. "In one place beneath the stratified epithelium there is imbedded foreign material which has been fairly well encysted.

3. "In this section there is an enclosure of sebaceous-like material, and the stratified epithelium is only a narrow rim. About this area there are numerous little aggregations of stratified epithelium appearing as rests (son Fig. 5*A*, 5*B*).

"*Diagnosis* is multiple inclusions of stratified epithelium, some of which have become cysts, in tissue from the lower angle of left side of jaw.

"Note: The question of this being connected with hyperthyroid condition is quite problematical. This is not in bone tissue, but appears to be embryonic remnants that have undergone cystic degenerative changes."—James E. Davis, M.D., consulting pathologist.

Aug. 19, 1935, to Dec. 18, 1936.—Frequent office calls and examinations were made.

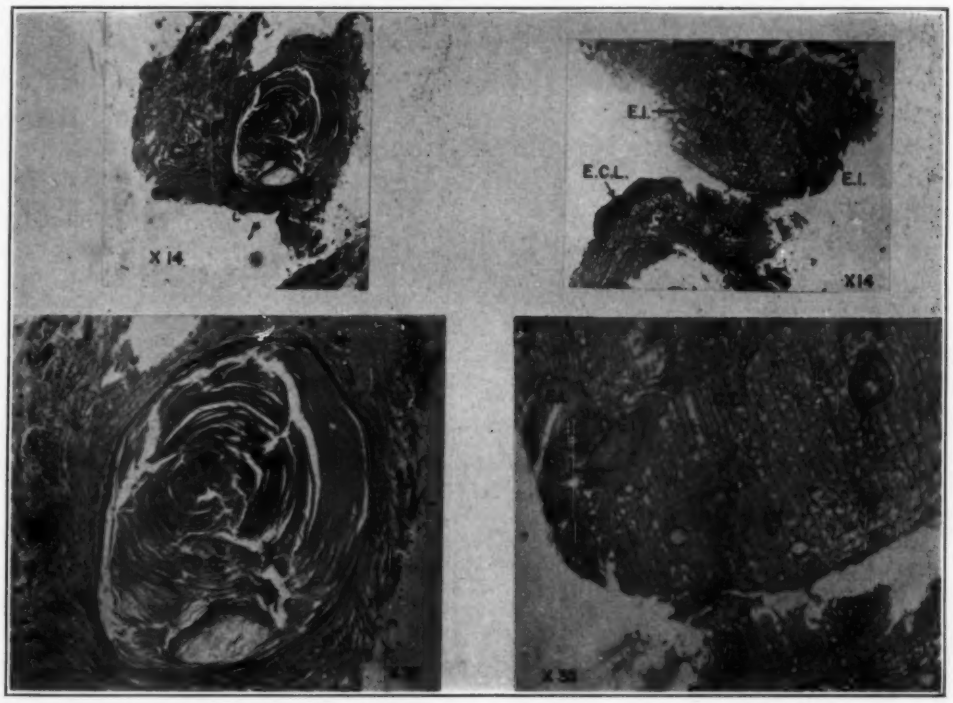
X-Ray Report.—Feb. 21, 1936.—"The skull was re-examined, and the films taken at this time were compared with the ones taken previously.

"There has been no appreciable change in the appearance of the intracranial calcification; it seems to be about as reported previously. The cyst in the left mandible is still evident.

"Additional study was made of the lower lumbar vertebrae and the pelvic bones as well as the right forearm and wrist. There are no cystic areas and no areas of abnormal calcification demonstrated.

"The patient should be returned for detail films of the left mandible and of the skull in the posteroanterior position."—L. Reynolds.

X-Ray Examination.—Dec. 18, 1936.—Films of right and left mandible disclosed the bone filling of the previous cystic areas of the mandible as excellent (son, Figs. 4*A*, 4*B*). A newly developed cystic area of the right mandible 1½ centimeters in diameter was revealed lying between the mandibular right first premolar and canine, its upper border at the crest of the ridge and its lower at a line with the apex of the canine. The premolar root was displaced distally, and both roots were apparently involved (son, Figs. 4*A*, 4*C*).



Son, Figs. 5*A* to 5*D*: 5*A*, Enlarged photo of tissue from wall of cyst of left mandible (son; Fig. 3) showing daughter cyst with thin squamous-celled lining and filled with desquamated epithelium. D.C., daughter cyst; C.T., connective tissue. 5*B*, Same as Fig. 5*A*. 5*C*, Enlarged photo of tissue from wall of cyst removed from maxillary left molar region (son; Figs. 6*A* and 6*B*). Dipping of the epithelium causing epithelial inclusions and daughter cysts is revealed. E.I., epithelial inclusions forming daughter cysts; E.C.L., epithelial cyst lining. 5*D*, Same as Fig. 5*C*.

Operative Record.—Dec. 26, 1936.—An operation for the removal of the cyst in the mandibular right canine and premolar area was performed (conduction novocain 2 per cent). Incision was made labially through the mucosa, and a small amount of overlying bone was removed. The cystic membrane was removed intact leaving the canine root exposed. The cavity was packed

with vaselined iodoform gauze, which was changed until healing approached the surface. The cystic contents were similar to the previous cysts. The cyst was sent for pathologic report.

Pathologic Report.—"The specimen is a cyst and its wall, the cyst being filled with yellowish flaky material. Microscopically, the wall of the cyst is made up of fibrous connective tissue showing no evidence of inflammatory reaction. The cyst is lined by squamous epithelium, the surface of which is keratinized epithelium.

"*Diagnosis* is epidermoid cyst."—H. E. Cope.

Oct. 5, 1937.—Dental film of mandibular right premolar region showed progressive bone filling of defect.

Dec. 7, 1937.—Patient complained of feeling of pressure in left maxillary sinus and of swelling and discharge intraorally beneath left malar bone in molar region. A fistula was discovered distal to the remaining maxillary molar in the buccal gum tissue. Pressure upon the mucosa in the molar region and upward behind the malar bone forced lumps of caseous material from the opening. An attempt to inject lipiodol, following irrigation, was only partially satisfactory because of fluid remaining in the cavity.

X-Ray Findings.—The films disclosed a cystic area lying almost entirely buccal to the maxilla and distal to the malar bone with no apparent connection with the antral cavity. Frequent irrigations of the cystic area were made over a three-month period.

March 29, 1938.—The cystic area was irrigated with a barium mixture. Films revealed a cystic area distal and buccal to malar attachment (son, Figs. 6*A*, 6*B*).

April 18, 1938.—An operation for the removal of the cyst from the maxillary left molar region was performed and the cavity was packed with vaselined iodoform gauze. The tissue was sent to laboratory.

Pathologic Report.—April 23, 1938.—"Specimen consists of several pieces of tissue from the wall of a cyst. The cyst is partially lined by well-formed squamous epithelium. Extensive areas of old scarring and granulation tissue are present. In some places the epithelium dips deeply into the capsule forming small daughter cysts lined also by well-formed squamous epithelium (son, Figs. 5*C*, 5*D*).

"*Diagnosis* is congenital epidermoid cyst."—H. E. Cope.

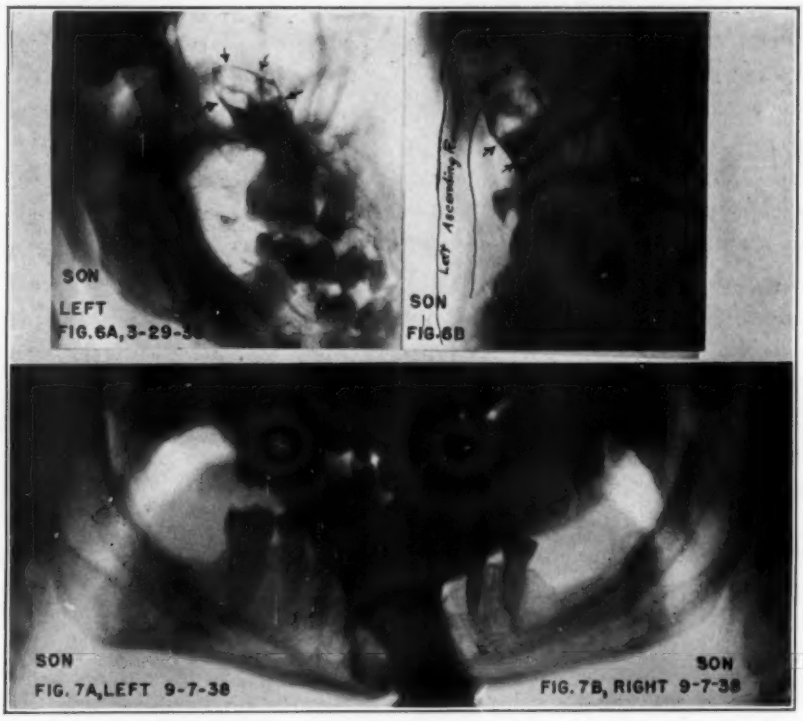
Sept. 7, 1938.—X-ray examination revealed complete bone filling of the cystic area of the left mandible (son, Fig. 7*B*). The old cystic areas of the right mandible appeared to have been replaced by normal bone, with the exception of a small circumscribed area in the lower right molar region (son, Figs. 7*B*, 8*B*, 8*C*). A small questionable area has appeared between the mandibular right premolars (son, Fig. 8*B*). A small cystic area was revealed between the maxillary left lateral incisor and first premolar (son, Fig. 8*A*).

Sept. 30, 1938.—The cyst on the left side of the lower lip had enlarged to one centimeter in diameter and was removed in its entirety.

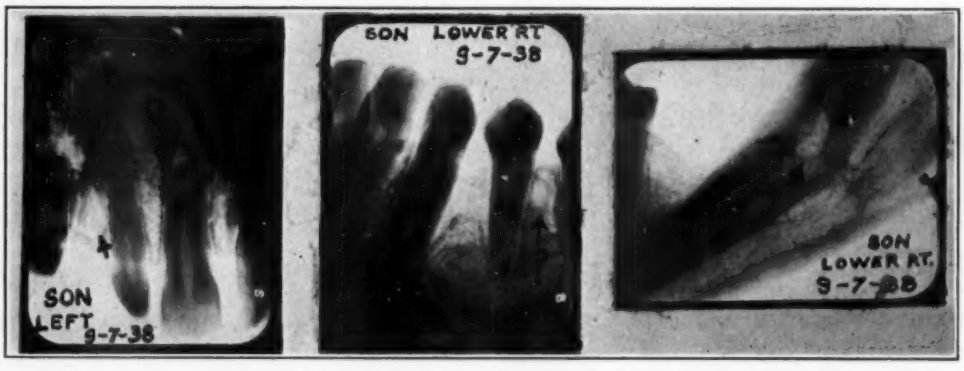
Pathologic Report.—"The specimen is a thin-walled cyst lined by a thin layer of flattened squamous epithelium. The lumen is filled with desquamated epithelial debris.

"*Diagnosis* is epidermoid cyst."—H. E. Cope.

Case Summary and Present Status.—Patient presented one large cyst of left maxilla and one each of right and left sides of the mandible in February, 1934. All cysts were removed with excellent healing. Subsequently a cyst



Son, Fig. 6*A* to 7*B*: 6*A*, Cyst of maxillary left molar region injected with barium mixture. 6*B*, Anteroposterior view showing cyst lying external to maxilla. 7*A*, Check film of left mandible reveals complete bone filling of defect. 7*B*, Check film of right mandible reveals complete bone filling of old defect but slight new cyst formation.



A. *B.* *C.*

Son, Figs. 8*A* to 8*C*: 8*A*, Dental film of maxillary left canine area shows small cyst between lateral incisor and premalar. 8*B*, Dental film showing bone filling in old cystic area between canine and first premolar. A suspicious area is noted between the two premolars. 8*C*, Dental film of small new cyst in mandibular right molar region.

developed in the mandibular right premolar region and another in the maxillary left molar region. These also were removed. The patient has also developed a cyst of the skin over the distal phalange of the little finger of the left hand (unoperated) and of the lower left lip.

All cysts removed were epidermoid in type, with multiple inclusions and daughter cysts.

CASE 3.—The patient, M. S., a white female, aged 10 years, was the daughter of patient in Case 1.

Family History.—See Cases No. 1 and 2.

Personal History.—She had the usual childhood diseases, scarlet fever at 6 years of age.

Examination.—Feb. 22, 1934.—The patient was a rather thin, pale child, weighing approximately 75 pounds. Oral examination disclosed some decay in the deciduous and permanent teeth, particularly the mandibular and maxillary first permanent molars. There was considerable malocclusion present.

X-Ray Examination.—Films of the maxillary canines (daughter, Figs. 1*B*, 1*D*) and mandibular second molars (daughter, Figs. 1*A*, 1*C*) revealed marked distention of the follicular sacs about the crowns of these unerupted teeth, with considerable crowding of the maxillary canines, particularly on the right side. The maxillary and mandibular right first permanent molars had decay encroaching upon the pulp tissues, also the mandibular left first molar. The patient was advised to have prompt treatment for these teeth and to return for frequent x-ray examination.

June 9, 1934.—X-ray examination revealed more definite enlargement of follicular sacs about the crowns of the maxillary canines and mandibular second molars (daughter, Figs. 2*A*, 2*B*). Periapical pathology was evident about the roots of the mandibular right first permanent molar, and this tooth was removed.

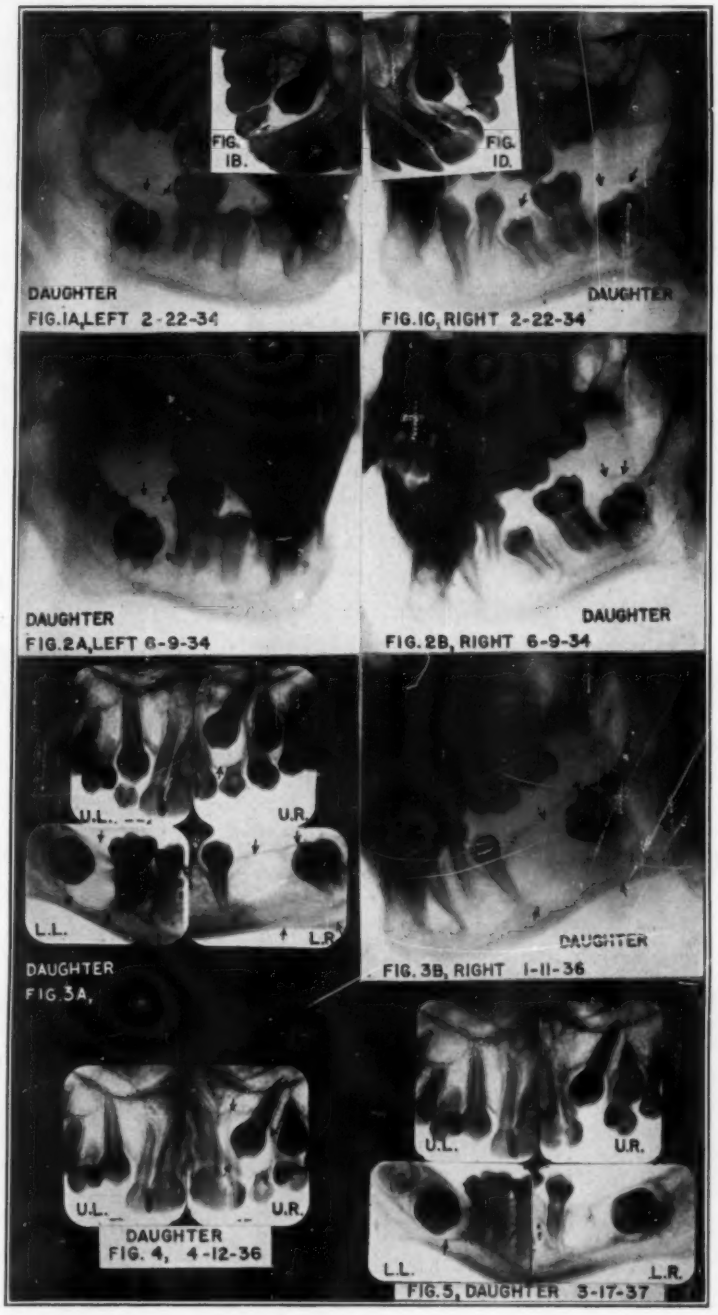
Jan. 11, 1936.—X-ray examination revealed a large area of rarefaction in the molar region of the right mandible extending distally from the second premolar to midway of the anteroposterior limits of the ascending ramus (daughter, Figs. 3*A*, lower right, and 3*B*). The entire body of the mandible in this region from lower to upper border was involved. The second molar was depressed and tipped to the mesial. The rarefied area was typical of a cyst of the mandible.

The left molar region revealed another area of rarefaction 1½ cm. in diameter, about and mesial to the crown of the suppressed and unerupted second molar (daughter, Fig. 3*A*, lower left). This area also was cystic in type and extended downward to within 2 mm. of the lower border of the mandible. It was interesting to note that the second molar had changed its position with the occlusal surface directed lingually. The maxillary right canine revealed a definitely cystic follicular sac about its unerupted crown, while that on the left appeared to be normal (daughter, Fig. 3*A*, upper left and right). Aspiration of these areas showed the contents to be caseous.

Clinical Diagnosis was epidermoid cysts, and operation was advised.

Feb. 14, 1936.—The patient was referred for x-ray examination of the skull and long bones. The report was received as follows:

"The skull and the dorso-lumbo-sacral spine, pelvis and the left forearm and hand were examined. The films reveal no abnormal demineralization and no cystic areas are to be seen in any portions under examination. The skull examination reveals the sella turcica to be of average size and with a tendency toward the roofed-in type."—L. Reynolds.



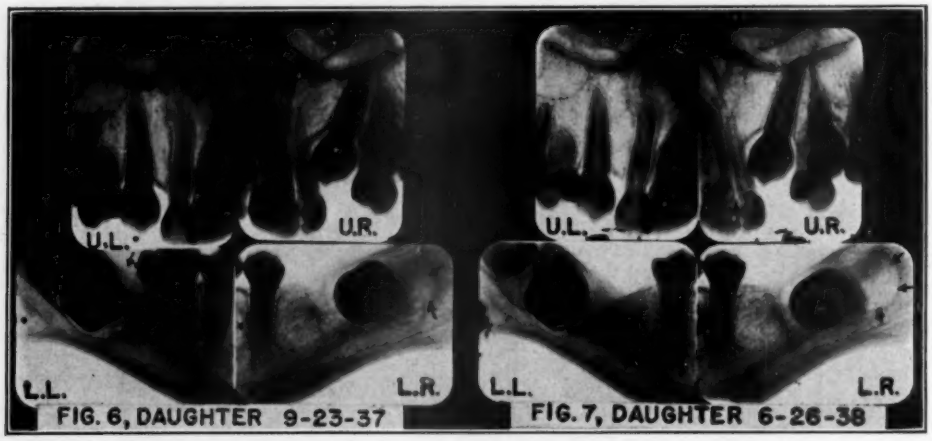
Daughter, Figs. 1*A* to 5: 1*A*, 1*B*, 1*C*, and 1*D*, Marked distention or cystic enlargement of the follicular sacs is noted about the erupting maxillary canines, mandibular second molars and second premolars. 2*A* and 2*B*, Slightly increased size of follicular sacs about crowns of mandibular left and right second molars is revealed. 3*A*, The maxillary left canine shows progress in eruption. There is increased cystic development about maxillary right canine. Cyst formation about mandibular left second molar with rotation of tooth to lingual. Large cyst about mandibular right second molar, anterior to premolar root. 3*B*, Complete cyst development of right mandible. 4, Partial eruption of maxillary left canine, right canine shows continued cystic development. 5, Check films of maxillary canine and mandibular molar regions following incision and drainage. Diminished size of follicular sac about crown of maxillary right canine with progress in eruption is noted. Complete lingual version of the mandibular second molars is revealed with good bone regeneration in the cystic areas.

Feb. 25, 1936.—Blood and serum calcium levels by Dr. Moehlig were reported as normal.

April 12, 1936.—X-ray examination of the maxillary canine areas revealed partial eruption of the left canine and persisting cystic distention of the follicular sac about the crown of the right canine (daughter, Fig. 4).

April 13, 1936.—The child's parents had decided to try drainage of these areas rather than radical removal of the cysts. Wide incision of the mucous membrane over all three cystic areas was made, and the cavities were packed with vaselined iodoform gauze. The packings were changed weekly for four weeks. For several months, frequent irrigations of the cystic cavities were made for removal of debris. Frequent checkup by means of dental films revealed satisfactory bone filling but little or no change in the position of the involved teeth. Orthodontic treatment was recommended.

March 17, 1937, Sept. 23, 1937, June 26, 1938.—On these dates, x-ray examinations revealed nearly complete eruption of the maxillary left canine and beginning eruption of the maxillary right canine with marked reduction in the size of its follicular sac. The cystic areas about the mandibular second molars progressively diminished with complete bone regeneration. The crowns of the second molars remained directed lingually. The mandibular left first molar was lost due to decay. The mandibular left third molar appeared to be forming normally while the right third molar was not evident. There was revealed an area suggestive of cyst formation in the mandibular right third molar area (daughter, Figs. 5, 6 and 7).



Daughter, Figs. 6 and 7: 6, Maxillary left canine erupted, right canine erupting. Persistence of slight cystic formation anterior to mandibular left second molar. Good bone regeneration in cystic area anterior to the mandibular right second molar but a suspicious area distal to the tooth. 7, Check films following extraction of mandibular left first molar. Cystic tendency anterior to mandibular left second molar reduced. Increase in size of area distal to mandibular right second molar. Bone regeneration anterior is complete. Lingual version of mandibular second molars persists.

SUMMARY AND CONCLUSIONS

Age Incidence.—The formation of the cysts in the jaws of all three patients have very apparently become activated during adolescence or during the beginning stage of eruption of the permanent dentition.

Growth.—There seems to have been an initial period of rapid cyst formation in each instance during which each cyst developed to a small size. This was then followed by a period of slow growth or rest, and this in turn by a final period of rapid expansive growth.

Etiology.—It might be justifiably claimed that the formation of new cysts within the areas of bone regeneration following the removal of the original cysts was due to incomplete removal of the original cysts. However, the repeated finding of epithelial rests and daughter cysts in tissues removed and the development of new cysts in other areas would tend to nullify that possibility.

There can be no question, when regarding this series of case reports, that the stimulation of epithelial rests within the membrane of the follicular sacs of erupting teeth has resulted in cyst formation. There is also strong indication that epithelial rests within the crest of the alveolar process and also in the soft tissues have been stimulated to cystic formation.

The development of epithelial growths elsewhere on the body of the mother and son at about the same period of life suggests the probability of some endocrinologic or metabolic stimulation which might be the prime activating agent in each case.

The presence of similar ectodermal dysplasias in the grandfather, mother, son, and daughter definitely establishes the hereditary character of the pathology in the cases reported.

Pathology.—In the cases studied all of the cysts have been lined with stratified squamous epithelium of varying thickness. The contents have all been thick and caseous, with little or no evidence of cholesterol, and of a character more typical of a dermoid cyst but without hair or other solid substance.

The subepithelial stroma has shown little or no evidence of round or plasma cell infiltration or other evidences of infection. None of the cysts were cultured. Many areas showed the epithelial tissues dipping deeply into the underlying stroma forming epithelial rests or islands with central disintegration and daughter cyst formation. No giant cells were found in any sections studied.

The many evidences of generalized epithelial growths would tend to definitely classify the conditions as a hereditary embryologic epithelial dysplasia and the cysts of the jaws as more truly epidermoid cysts rather than dentigerous or follicular cysts.

Bone Regeneration.—Bone regeneration following the removal of each cyst has been complete as judged from x-ray examination within the second year postoperative. Normal trabeculations and re-establishment of a cortical layer has occurred in each case where the cyst has its origin within bone.

Prognosis.—There is every reason to believe that each case will continue to develop new cysts of the jaws and possibly elsewhere on the body from time to time during the life of each individual.

1713 David Whitney Bldg.

Case Reports

Dr. Charles J. Smith submits the report of a unique type of fracture.

The Editor requests that the readers cooperate and submit their own interesting cases to be published. Send contributions to Dr. Kurt H. Thoma, 53 Bay State Road, Boston, Mass.

CASE REPORT NO. 27

FRACTURE OF THE MANDIBLE

CHARLES J. SMITH, D.M.D., PROVIDENCE, R. I.

DR. EDWARD F. GILL called to my attention the following case of unique fracture of the mandible, occurring in a white male, a 60-year-old carpenter.

Complaint.—Soreness of the throat and difficulty when swallowing.

Fig. 1.

Cause of Fracture.—This man was employed in a brewery, and when he slipped on the flooring, the angle of the jaw was caught against the upper end of a barrel.

History.—The patient had an accident causing a blow to be directed on the side of the face in the region of the angle of the jaw. He complained of soreness in the throat and found swallowing somewhat difficult. There was slight stiffness of the neck. He had been uncomfortable for three to four days.

Examination.—There was no evidence of swelling, inflammation, or suppuration. His temperature was almost normal. The maxilla was edentulous; in the mandible there were six teeth in the anterior region. These were affected by parodontal disease. The patient was wearing a denture in the maxilla.

X-ray Examination.—A fracture of the mandible was discovered extending from the posterior border of the ramus at the neck of the condyle to the middle of the inferior border of the jaw. It did not involve the mandibular foramen, but followed approximately the part of the mandibular canal contained in the ramus. The fracture was complete, and the angle of the jaw was entirely separated from the ramus and the lower border of the mandible (Fig. 1).

Treatment.—A brace was applied from the top of the head running down to the chin and buckled at the sides. This brace was worn for four and one-half weeks immobilizing the jaw. The patient received the usual mouth hygiene and diet for such cases. Progress was good. There were no symptoms of discomfort after the third day, and recovery was uneventful. Examination three months later showed bony union. The patient was discharged after two months and three weeks.

Erratum

On page 583 in the June issue of the Journal in the article by Sampson S. Hecht, "Chronic Irritation of the Epithelial Tissues of the Mouth Associated With Dentures," the cuts for Figs. 7 and 8 should be transposed so that the photomicrograph, Fig. 7, appears over its proper legend and the mouth impression, Fig. 8, appears over its proper legend.

Department of Orthodontic Abstracts and Reviews

Edited by

Dr. J. A. Salzmann, New York City

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City.

Resorption Produced by Dento-Maxillary Malformations. By Quintero and Peyrus, Lyons, *Rev. de Stomatologie* **41**: 331, April, 1939.

A case is presented of a 22-year-old soldier of small stature but of robust physique with a Class II Division 1 (Angle), maxillary protrusion, with the maxillary incisors in labioversion while the mandibular incisors occluded on the palate. The patient complained of repeated ulceration of the palate due to traumatism induced by the faulty occlusion of the mandibular incisors. The age and occupation of the patient, as well as other factors made orthodontic treatment impracticable. The maxillary incisors were extracted and an alveolar resection was performed, and eventually the teeth were replaced with a prosthetic appliance.

At the time of the extraction it was found that the roots of the four incisors had been resorbed to various degrees. Resorption was especially marked in the left central and lateral incisors. On resection of the alveoli from which the teeth had been extracted, a small mass of connective tissue was found to occupy the space formerly taken up by the resorbed parts of the roots. The teeth were not loose during the time when the resorption was taking place, and the patient had never had orthodontic treatment. The question is asked, what caused resorption?

Ketcham, speaking before the First International Dental Congress in New York, 1926, reported on 385 patients of whom 81 showed root resorption. He analyzed 161 cases as follows, in relation to the type of orthodontic appliances employed:

Pin and tube,	12 cases;	4 showed root resorption.
Ribbon arch,	46 cases;	23 showed root resorption.
Labial arch,	42 cases;	3 showed root resorption.
Lingual arch,	61 cases;	2 showed root resorption.

The foregoing points to an association of root resorption with the use of rigid appliances. On the other hand, Ottolengui, 1913, and others have called attention to the occurrence of root resorption in the absence of orthodontic treatment but following traumatism.

The authors believe this case to be one of trophic resorption, induced by the repeated shock caused by the occlusion of the mandibular incisors against the palate, to which the patient never paid any attention.

These shocks, the authors believe, acted as levers in driving the maxillary incisors forward and in causing at first a destruction of the alveolar process and

later a resorption of the teeth, replacing the bone with connective tissue. The reason for the firmness of the teeth in the jaw is thought, by the authors, to be the fact that the teeth remained vital.

Supernumerary Teeth. By H. T. Roger-Hall, London, *The Dental Gazette,* Pp. 493-489, April, 1939.

Supernumerary teeth are not common. They are rare in the canines, occur most frequently in the premaxillary region, and have been observed in the deciduous as well as the permanent dentition and are known to show the respective characteristics of either dentition. There are two types: (1) Those resembling normal teeth and invariably found in the region of the tooth they simulate, and (2) those unlike normal teeth, usually conical, in the incisor region of the permanent dentition and tuberculated in the deciduous dentition. Supernumeraries should be suspected in cases of delayed eruption.

The following theories are suggested as to etiology of supernumerary teeth: (1) Aberration of toothband. (2) Odontomes. (3) Division of the toothband by fissure of Brandt. (4) Atavism. (5) Dichotomy of the tooth bud. (6) Association with malformation of the eyes and nails. (7) Degenerative developmental changes connected with premaxillary bone. (8) Degenerative developmental changes in connection with cleft palate and harelip. (9) Heredity. (10) Hormonal derangements. An excess in the number of teeth is slightly more frequent than a deficiency.

There is a tendency for supernumeraries to become involved in cystic activity. They may produce difficulty in diagnosis, especially if unerupted, their shadows interfering with radiographic interpretation. They may interfere with normal tooth eruption. They may erode adjacent normal teeth causing degeneration. Unerupted supernumeraries may interfere with wearing of artificial dentures.

The Practical Form of the Space Maintainer. By G. Janssen (Bronn), *Zahnärztl. Rundschau,* **51**: 2164, 1938.

The deciduous teeth serve two purposes with regard to the eruption of the permanent dentition: (1) The maintenance of the line of occlusion and (2) the transmission of occlusal force to the jaws, through which growth in width, length, and height is activated. The transmission of sagittal growth pressure and space maintenance are the passive functions of the deciduous teeth. Korkhaus has pointed out the following conditions which must be met by space maintainers. (1) Maintenance of the full mesiodistal dimension of the space. (2) The space maintainer should not interfere with the vertical growth of the teeth and of the alveolar process. (3) The individual functional movement of the teeth must be maintained. (4) The eruption of the permanent tooth under the space maintainer must not be interfered with. (5) The space maintainer must provide mesiodistal space opening through natural growth processes.

Where wires are allowed to span the crest of the ridge, the possibility exists of their interfering with erupting teeth and actually inducing malocclusion instead of preventing it. The foregoing is especially true if the patient is not seen at frequent intervals.

Angina Pectoris and Spasm of the Cardia With Pain of Anginal Distribution on Swallowing. By Joseph Edeiken, M. D., *J. A. M. A.* **112**: 2273, June 3, 1939.

A case is presented of acute onset of pain on swallowing, complicating angina pectoris of long duration. The attacks of pain provoked by swallowing and effort were very similar in character and distribution and each was also accompanied by a sense of suffocation.

The chief differences between the two types of attacks of pain were as follows: The attacks of long-standing angina pectoris were induced by effort or excitement, relieved by rest and glyceryl trinitrate, and uninfluenced by antispasmodics. The attacks that followed swallowing were not influenced by rest or glyceryl trinitrate but were relieved by antispasmodics. These observations suggest that spasm of the cardia was a significant factor in the mechanism responsible for the attacks of pain after swallowing. Attacks of pain on swallowing were very similar in character and distribution to those of angina pectoris provoked by effort or excitement except that sometimes the former started in the finger tips and radiated to the chest, whereas the latter always started in the chest.

A Comparison of the Diets of the Children, Soils, and Waters in the Kruisrivier, Beaufort West, and Alldays Areas, in Relation to Dental Caries. By T. Ockerse, D.D.S., *The South African Dental Journal,* p. 108 (April), 1939.

The incidence of caries in these three areas is respectively 100, 48, and 39 per cent of the children. Apparently an extremely deficient food intake of dry bread, black coffee, sweet potatoes, rice, and almost mineral free water is responsible for the condition at Kruisrivier. On the contrary the Beaufort and Alldays inhabitants enjoy also milk, porridge, meat, and water which has a fair mineral content although the proportions of each are not mentioned. Oral hygiene has been neglected in all areas. Examinations were made with probe and mirror. In recording the geography, topography, climatology, geology, soil, and water, Dr. Ockerse points out that the soil in Kruisrivier is poor and can be utilized only for growing timber, whereas it is comparatively good in Beaufort and Alldays.

Frances Krasnow, Ph.D.

Book Reviews

Tissue Reactions in Bone and Dentine: A Morpho-Biological Study of the Formation and the Dissolving of Bone and Dentine. By Åke Wilton, M.D., Assistant Professor and Lecturer in Pathology at the Caroline Institute, Stockholm. London, Henry Kimpton, 1937.

As suggested in the sub-title, the book is divided into two parts; the first, osteo- and dentinogenesis, the second, osteo- and dentinolysis. Each begins with a discussion of the research work and opinions of various authorities on different phases of the subject. In fact, the viewpoints of these numerous investigators

are cited in appropriate places throughout the text with astounding detail; the references to them cover the last ten pages. The body of each of the two parts is a report of the author's ten years' research, followed by a concluding discussion. A comprehensive conclusion and summary complete the work.

The author's main thesis is the reversibility of the biochemical processes of bone matrix production and dissolution. In brief, bone matrix is formed when the osteocytes become differentiated, and the matrix is dissolved when these cells become de-differentiated. Differentiation is slowed down in rachitis, and growth is arrested proportionately more in the faster growing bones. There is a similar effect in the dentin, where, instead of an even homogeneous growth, the slow differentiation of the odontoblasts creates dentin in the form of lime-spheres. In scurvy, instead of regular dentin formation, the dentin formed in a guinea pig's incisor was irregular, very similar to scorbutic bone. One can alternate de-differentiation and re-differentiation of the odontoblasts by low and high vitamin C feeding.

The author describes four types of osteoclasts, all of which can be produced by parathormone injections. Bone resorption is identical morphologically, whether caused by exogenous factors such as hyperparathyroidism or scurvy; or by endogenous factors, such as Paget's disease or osteogenesis imperfecta. The book is very well illustrated, especially by the author's many photomicrographs. It is a scientific report of the author's research and a scholarly presentation from the historical viewpoint of the subject. It will serve admirably for those desiring a more basic and thorough understanding of cellular activities, so fundamental to orthodontics as the formation and dissolving of bone and dentin.

Richard H. Stucklen.

Endocrinology in Modern Practice. By William Wolf, M.D., M.S., Ph.D., Ed. 2, 1077 pages; 176 illustrations, price $10.00, Philadelphia, W. B. Saunders, 1939.

This book, so popular among members of the medical profession since the publication of its first edition in 1936, has been completely revised to bring this rapidly changing subject up to date. In this volume may be found answers to many of the problems which confront not only medical practitioners but dentists as well. The subject is not treated as a pure endocrinologic dissertation, but rather as a constant reminder of the close relationship of endocrines to other phases of biologic phenomena. After a thorough discussion of each gland, its relationship to the other glands and the body as a whole, and the disorders which may be induced by its aberrations, the author takes up various special phases, such as diseases of children, nervous and mental diseases, the gastrointestinal tract, the cardiovascular system, the skin, etc. The text is of value to dentists because it will help them to understand important diseases related to their field and will aid in the interpretation of the various tests, e.g., sugar tolerance, specific dynamic action, diffusible calcium, and others with which they may be confronted from time to time. In addition, it has a complete chapter on diseases of the oral cavity. This section is well

written from the endocrinologist's viewpoint, and the author has had sufficient consultation with members of the dental profession, to make it of practical value to the oral physician.

An ingenious summary at the end of each chapter gives the reader a bird's-eye view which serves as a quick source of reference. The sections on bone development and anthropometry, and the interpretation of laboratory findings, are replete with information for the dentist.

Samuel Charles Miller.

Elementary Anatomy and Physiology. By James Whillis, M.D., M.S., F.R.C.S. University Reader in Anatomy, Guy's Hospital Medical School, London. Formerly Lecturer in Anatomy in the University of Durham. Octavo, 352 pages, illustrated with 87 engravings, Cloth, $3.50 net. Philadelphia, Lea and Febiger Co., 1939.

The aim of the author is to correlate structure and function by stressing the interdependence of anatomy and physiology. As indicated by the title, the subject matter is presented in elementary fashion. For that reason those who are desirous of familiarizing themselves with this modern viewpoint, without having the time or inclination to give detailed study to the combined subjects, will do well to buy this book. One wonders why the author goes all the way back to Tomes for his information on tooth eruption when more modern authors such as Schour, Kronfeld, and others have since provided more accurate data.

This textbook is easy to read and to understand. The illustrations are of semidiagrammatic type and are made from original drawings. The static approach to the teaching of anatomy has here been abandoned for the more intelligent and more interesting one which combines the functional use of the various organs. The book has a good index.

Editorial

The Changing Concept of the Orthodontic Problem

THE medical profession came to the realization many years ago that the first urgent step in any physical disease or illness is to locate the cause and, if possible, promptly dispose of the factor that started everything. That would seem entirely sound reasoning and the logical procedure in all cases. Notwithstanding, too many times in irregularities pertaining to the dental architecture, it is assumed that somehow there is a remedy for the situation even without first removing the cause, or, admitting that there is a cause which must be considered.

Paradoxically, corrections of malocclusion many times work out satisfactorily, even though the cause of the condition has not been eliminated. In the appraisal of a given case, more times than not the real definite etiological factor involved is a speculative proposition, or guesswork at its best, and the operator must do his best with the knowledge at hand to bring about a satisfactory correction.

No doubt, the fortunate combination of circumstances that makes it possible to secure a satisfactory result even though the cause may be speculative in the correction of malocclusion is that occasionally, at least, as the child grows older, the original factor responsible for the malformation has ceased to manifest itself; accordingly, at the period of correction, this factor offers no resistance to correction.

On the other hand, there are cases that relapse (partially, at least) regardless of diagnosis, type of appliances used, or the orthodontist; notwithstanding, these cases are given what amounts to perpetual care, or the work is continued to be held in place by some kind of mechanical device, used as a "retainer."

In referring to the many orthodontic problems which confront practitioners, it has often been said, particularly during the past few years, that the etiological factor in the general appraisal and prognosis picture has not been seriously enough considered by practitioners as a group, and, no doubt, this is true.

Dr. C. C. Howard sums up the situation tersely in a letter pertaining to the percentage of successful corrections: "Malocclusion of local origin, caused by several simple factors, known as too early loss of deciduous teeth, thumb-sucking, cheek-biting, supernumerary teeth, and so on, is easily interpreted and constitutes the biggest percentage of successes with which we have to deal. On the other hand, when it comes to the definite retarding of the bony structures constituting the jaws, or when it comes to accelerated growth of the same parts, resulting in malpositions of the teeth, you must deal with a real problem which is little understood. If we understood even a smattering of the phenomenon of

growth, we would begin to open the door to scientific orthodontics, but our trend has been more or less completely circumscribed by mechanical interests. Biology, the study of life's processes, should be made 98 per cent of orthodontic training. This brings us to the fact that many malocclusions, simple in character, between the ages of 7 and 11 years represent a transition stage of physiologic adjustment and many of them will ultimately correct themselves."

Any experienced orthodontist knows observation of cases is more constructive treatment for the child than is mechanical treatment, and yet, knowing this, overtreatment is the rule rather than the exception. No doubt, one of the most important trends in the progress of the work will be a fuller and more comprehensive understanding of the problem, as related to health, nutrition, physical degeneration, heredity, endocrinology, and processes which correlate the dental structures to the entire body as a biologic unit, instead of the appendage concept of the oral structure in its relation to the skeleton as a whole.

Much is being done to add to the advance of orthodontics in the future, work based on the premise that malocclusion is influenced greatly by genetics upon the morphology of the live organism and that variation is one of the most constant natural laws.

The engineering, mechanical, architectural, mathematical, or even rule of thumb perspective of the orthodontic problem is obviously on the wane; it is being replaced by the growth-minded perspective which Mershon advocated so long. That is to say that the growth processes which are concerned with the formation of the jaws are all the same as the growth processes which influence the formation of the skeleton as a whole; these must not be ignored if we are to get the most out of the subject.

More recent work which helps solve the orthodontic problem assumes that malocclusion is a result of something that, if recognized, can be an aid to treatment instead of a hindrance. This idea reverts to the main tenet of the medical profession which is: To cure the disease, first find out the cause. Obviously this is the orthodontic epoch now in the offing, the result of persistent work of those who unselfishly sacrifice time and effort for more light and advancement, and who are far-sighted enough to think more about the cause of the disease as the real key to the cure.

H. C. P.

Presentation of the Ketcham Award, 1939, by Harry E. Kelsey, President of the American Board of Orthodontics

Mr. President, Members of the American Association of Orthodontists, and Members of the American Board of Orthodontics:

The recipient of the Ketcham Award, as you all know, is selected annually because of his record of outstanding contributions to the art and science of orthodontics. This being so, it seems especially fitting that the man whose name has been presented by the committee this year should be universally known as not only fulfilling this requirement to a marked degree but also that in at least one important respect his attitude toward our common calling should be the same as the man in whose memory this award was established.

Too often recruits to a profession, observing the esteem in which it is held by the public, are content to accept it as they find it and make no effort to prove the worth of its teachings or to advance its borders in the realms of science and technical skill. It has not been so with these men. Both have been noted for their fearless analysis of the tenets of our specialty and their earnest and steadfast pursuit of knowledge that would enhance the usefulness of our service to humanity. The history of the Ketcham memorial teaches you his place in the archives of orthodontics.

Today, it is my place to speak of Milo Hellman, not to acquaint you with (for you already know them) but to enumerate and recall to your minds some of the notable events in his life. Perhaps I am exhibiting a little pardonable vanity when I say that the pleasure of performing this duty is enhanced by the fact that I was a fellow student of his at the Angle School of Orthodontia. This fact, at least, puts me in a position to comment on his career in orthodontics from its very beginning, and I can truthfully say that from the moment he entered the specialty he devoted himself to the mastery of its fundamentals with the same calm but forceful application that has characterized his later study and research, and I may add, with the same notable results.

A year or two after finishing the course at the Angle School, he became editor of the *American Orthodontist* continuing in this position until it was discontinued. Before this occurred, however, Hellman had already launched upon the first of a long series of investigations into the problems of orthodontics and followed this up with studies in many fields of collateral science. During the time that the Angle School was carried on in the East, Hellman had the advantage of being closely associated with Dr. Angle. Few had a better opportunity of observing and mastering ideas which Dr. Angle evolved and developed in technique and appliances, but being of a conservative disposition, he continued to perfect himself in the use of appliances and technique which had already proved their worth, and the beautiful results he has so often shown (before many different societies), as the result of treatment in which he employed the simpler forms of the expansion arch, testify to the completeness of his mastery of those appliances. During this period, and with increasing regularity, there began to appear from his pen the first of that long list of papers and reports of researches which certainly equals, in volume and importance, that of any other man in the field of orthodontics. It is unnecessary to tabulate here all of the contributions to orthodontic literature made by Hellman since the beginning of his career in 1908. This is a matter of history and is recorded in our dental index, but I do feel it is appropriate to mention the outstanding events in his education and preparation for his life work and to enumerate the degrees and honors which have been conferred upon him.

EDUCATION, DEGREES, AND PROFESSIONAL CAREER

Received D.D.S. degree in 1905, University of Pennsylvania; graduated from Angle School of Orthodontia, 1908; honorary degree D.Sc. conferred by University of Pennsylvania, 1933; awarded honorary citation at Western Reserve University, 1937. Research Associate in Physical Anthropology, American Museum of Natural History, N. Y.; professor of Dentistry, School of Dental and Oral Surgery, Columbia University, 1932—;

lecturer in Orthodontia, University of Pennsylvania School of Dentistry, 1924-26; lecturer in Orthodontia, Harvard University Dental School, 1927-28; professor of Comparative Dental Anatomy, New York University College of Dentistry, 1927-28; professor of Orthodontia, New York University College of Dentistry, 1928-29.

Participated in International Symposium on Early Man, Philadelphia, March, 1937. Honorary President, First and Second International Orthodontic Congresses (N. Y., 1926 and London, 1931). Member committee on Growth and Development, White House Conference on Child Health and Protection, 1930. Member Executive Group of Committee for Standardization of Anthropological Techniques, International Congress of Anthropologists and Ethnologists, 1937-38. Editorial Board "Archives of Clinical and Oral Pathology." Member South African Expedition sent by American Museum of Natural History, 1938.

Fellow of New York Academy of Sciences (Vice-President, 1932, 1933); Fellow, American Association for the Advancement of Science; Fellow, American College of Dentists; Fellow, New York Academy of Dentistry; Associate Fellow, New York Academy of Medicine.

FRATERNITY AND SOCIETY MEMBERSHIP

Delta Sigma Delta Fraternity; Society of Sigma Xi; American Dental Association; New York State Dental Society; First District Dental Society; International Association for Dental Research (President, New York Section, 1933); American Association of Physical Anthropologists; American Association of Mammalogists; American Ethnological Society; American Association of Orthodontists (member of Executive council and research committee); Eastern Association of Graduates of Angle School of Orthodontia (hon. member Southern Society of Orthodontists).

Permit me to proceed with a quotation from "An Appreciation of Milo Hellman's Work" read before the Southern Society of Orthodontists, January, 1929, by William K. Gregory, Ph.D., of the American Museum of Natural History: "Hellman has not been content to assimilate the results of modern paleontology and comparative anatomy on the evolution of dental arch and tooth form. He has at all times striven to keep abreast with advances in knowledge of those physiologic processes of bone resorption and reformation which alone make possible the favorable movement of the malposed tooth under the stress of the appliance. This again has made him a keen observer of the forces of growth and differentiation and has led to a series of papers in which the effort has been made to describe graphically and statistically the stages of growth and differentiation of the body as a whole, of the skeleton, of the face, of the jaws, and of the teeth.

"Long ago Hellman's researches led him to appreciate the great central fact of physical anthropology, which is normal variability. Through his labors the fixed standardized types of the older textbooks have been shown to be mere artificial makeshifts. Sooner or later every orthodontist must grasp the significance of normal variability or take the consequences. In all this field Hellman has had the benefit of the counsel and guidance of the famous anthropologist, Professor Franz Boas of Columbia University.

"Racial differences in skull and tooth form early began to engage Hellman's attention, but apart from a few important but brief papers the greater part of his material in this line is still unpublished. Even so, the value of Hellman's

work is so clearly recognized that some years ago he was appointed research associate in physical anthropology in the American Museum of Natural History, where he has long worked on the great collections of human skulls of all races.

"In the democracy of science the party of the opposition is no less important than in the democracy of government. In the field of orthodontics Hellman has frequently been a leader of the opposition. For many years he has steadily opposed static ideals of occlusion and mechanical concepts of complex biologic phenomena. He has taught unceasingly that the artist is more important than his implement and that the variability of nature must first be offset by increasing our biologic knowledge rather than by multiplying our apparatus."

Since the foregoing lines were written by Dr. Gregory ten years ago, Hellman has continued his studies and investigations with unabated energy and has made many more contributions to the literature of orthodontics, in particular, and to science, in general. Some of the papers have been of a practical nature and very valuable; others have been made in the field in which both he and Gregory are so much interested, being presented as joint contributions. It is of inestimable value to orthodontics and I believe equally so to the science of anthropology that these two men approaching the field from different angles should have been able to combine the results of close clinical observation over a long number of years with careful research carried on in an institution which provides the utmost in physical material in the museum itself and in expeditions for field study. The latest contribution appearing from their joint study is the article which appeared in the current number of the *Journal of the American Dental Association* and which was read before the section on anthropology of the American Association for the Advancement of Science at Richmond, Va., Dec. 30, 1938. It was a digest of the report of their studies on the dentition of the extinct South African man apes and has been sent to the Transvaal Museum for publication in its annals. Hellman and Gregory went to South Africa to make their study in response to an invitation from Dr. Broom and Director Swierstra of the Transvaal Museum, Pretoria, to come to South Africa to study the dentition of the South African man apes, and also an invitation from Dr. Dart, professor of Anatomy and dean of the Medical School of the University of Witwatersrand, Johannesburg, to come there for the same purpose. While there, Hellman was elected an honorary fellow of the Odontological Society of the University of South Africa, and the University of Witwatersrand, Johannesburg, conferred upon him the degree of Doctor of Science, it being stated at the ceremony that he was the first of the dental profession to receive the degree from a South African University. The papers published by Hellman on orthodontics and anthropology number fifty-five. Joint papers on anthropology, comparative anatomy, paleontology, and evolution, with William K. Gregory, Louis Sullivan, and others, number about fourteen. Several papers and twenty-five lectures on orthodontics are as yet unpublished.

We owe Hellman a heavy debt, not only for his personal researches but also for the fact that those researches have attracted the attention of such men as William K. Gregory, Franz Boas, and many others, and inspired in them an interest in the problems which confront us. In private life Hellman represents the quiet unobtrusive gentlemen interested in the affairs of his community and

also in those world events which claim the attention of all thinking men. He is also an artist who achieved notable success in the field of music, giving it up as a vocation but retaining it as an avocation when he entered the field of orthodontics as a life work.

In preparing this short sketch, I have endeavored in an imperfect manner to relate some of Hellman's achievements. I can assure you that it was not difficult to find material, but rather to know what to select, from the wealth of material afforded by the record of his life work.

And now, Dr. Hellman, it is with a sense of the deepest satisfaction that, as President of the American Board of Orthodontics, I have the privilege of handing you this certificate which reads: "The honor signalized by the Albert H. Ketcham Memorial is hereby conferred upon Milo Hellman. This award is annually made in recognition of valuable contributions to the science and art of orthodontia." It is the tangible evidence of this award. I am sure that the committee, and every member of this association, experiences a like satisfaction, and I am equally sure that if our former friend and confrere, Albert Ketcham, could stand with us today, he would wholeheartedly approve the 1939 selection for the Ketcham Memorial Award.

Dr. Hellman's Remarks in Accepting the Award

Mr. President, Ladies, and Gentlemen:

Some years ago Dr. Edward C. Kirk extended an invitation that I visit him in Philadelphia "to settle the world's affairs," as he stated. The world at that time, during the World War, certainly needed settling. When I called on Dr. Kirk, there was quite a collection of skulls in his office. It looked as though he was somewhat baffled by the material there, and he just wanted me to settle that. The skulls, as it happened, belonged to different races, different sexes, and different stages of development. After giving him a detailed account of the material around us, Dr. Kirk turned to me and said, "Milo, you are traveling an awfully lonely path." I do not know whether it was encouraging or not, but I thought as long as the path leads somewhere, it really did not matter.

On another occasion Dr. Fred C. Kemple, our lately deceased friend, was visiting me at the American Museum of Natural History. I was in the skull room where several thousand skulls are stored. He said, "Milo, you look to me like the 'lone' fisherman who is sitting at a big pond looking for tiny, little fishes." Again the word "lone" was mentioned.

Encouraged by those "lonely" expressions, instead of one path I chose two; one was the path of science, and the other the path of orthodontic practice.

Things went along quite all right, and I thought I was sailing nicely. I used to think that "among anthropologists I am considered a great orthodontist, and among orthodontists, a great anthropologist." It was really all right as far as it went.

Some time ago a book appeared on the market. It was written by Mr. H. G. Wells. The book was called *The Outline of History*. I am fond of reading, but before I buy a book, I make certain it is authentic and authoritative. Besides

that, I thought it was quite an investment—ten dollars for the work. So I decided it was advisable to make some inquiries about this book. I spoke to a prominent paleontologist who I knew had the book. I asked him, "What do you think about *The Outline of History?*"

He said, "It is a wonderful book. The only trouble is that the chapter on paleontology is not as good as the rest of it."

I then asked a chemist what he thought of the book, and he thought, too, that the book as a whole was wonderful but the part on chemistry was not so hot. Well, I was wondering, but I was also plodding along.

MILO HELLMAN

Not so very long ago I was fortunate enough to be honored by three different universities. The first honor was in recognition of my scientific endeavors; the second and third were in recognition of my scientific and dental achievements; and the last one was in recognition of my dental contributions, when I was made an honorary member by the South African Odontological Society.

After all, I always thought that I am an orthodontist, and orthodontics is really nearest my heart.

I do not know whether you remember that remarkable and genial person, Dr. Woods Hutchinson. He once said, at a meeting of orthodontists, that a rooster crows best on his own heap of fertilizer. I was wondering. This occasion, however, removes all my apprehensions, and I have stopped wondering.

This occasion makes me very happy. I am happy and thankful because I am an orthodontist; I am happy and thankful because I have done my level best; and I am happy and thankful to be closely associated with and intimately befriended by those gentlemen who are wary and on the lookout for everything that is happening in the profession. Judging by their choice of those who preceded me in this honor, I think they have shown good judgment. I am, therefore, happy and very thankful to have been chosen as one who merits the distinction of this honor. Moreover, I hope sincerely that by this award to me we are doing honor to the memory of the dear friend of all of us, Albert H. Ketcham.

Thank you.

News and Notes

Certified by the American Board of Orthodontics

The following list contains the names of the men who have been granted certificates by the AMERICAN BOARD OF ORTHODONTICS* at the 1939 meeting in Kansas City, Mo.

Candidates certificated in 1939:

Dr. Howard J. Buchner, 1011 Lake St., Oak Park, Ill.
Dr. Winston P. Caine, Medical Arts Bldg., Chattanooga, Tenn.
Dr. Herbert K. Cooper, 26 No. Lime St., Lancaster, Pa.
Dr. Floyd E. Gibbin, 333 Linwood Ave., Buffalo, N. Y.
Dr. Willis H. Grinnell, 45 Bay State Road, Boston, Mass.
Dr. Louis M. James, Jr., 6247 Brookside Blvd., Kansas City, Mo.
Dr. Richard A. Lowy, 190 Clinton Ave., Newark, N. J.
Dr. Harry N. Moore, 503 Cobb Building, Seattle, Wash.
Dr. Jacob A. Salzmann, 654 Madison Ave., New York, N. Y.
Dr. Will G. Sheffer, Medico-Dental Building, San Jose, Calif.
Dr. M. A. Weingart, 136 East 57th Street, New York, N. Y.
Dr. Clyde O. Wells, Montgomery Bldg., Spartansburg, S. C.

Congress of the International A. R. P. A.

The eighth annual congress of the International A. R. P. A. and the yearly meeting of the German Association for the Research of Paradentosis will be held at Freiburg/Breisgau from Aug. 1 to 5, 1939. All inquiries should be directed to the office of the A. R. P. A. Congress, 11 Rottecksplatz, Freiburg/Breisgau, Germany.

Great Lakes Association of Orthodontists

The thirteenth annual meeting of the Great Lakes Association of Orthodontists will be held at the Dearborn Inn, Dearborn, Mich., on Nov. 6 and 7, 1939.

Southern Section Pacific Coast Society of Orthodontists

The Southern Section of the Pacific Coast Society of Orthodontists held a meeting on March 10, at the University Club in Los Angeles, Calif. The program of the meeting was as follows: Dr. Fred McIntosh gave a brief informal report of the work in progress by the Committee on Dental Laws. Chairman Hays Nance introduced Dr. Charles Reagan, sponsor of the Dentist's Equity Plan, who described in detail the advantages which will accrue to the dental profession if this plan is put into operation. After some discussion, it was moved and seconded that the Southern Section of the Pacific Coast Society go on record as approving the plan.

The Secretary read a letter from Dr. James McCoy in which Dr. McCoy suggested the following method of improving the programs of the Society, especially in regard to case reports.

*At the time of the Kansas City meeting, the name of the Board was officially changed to the AMERICAN BOARD OF ORTHODONTICS in keeping with current trends in nomenclature.

OUTLINE FOR CASE REPORTS—

These to be presented in writing, accompanied by illustrations, showing facial, denture and roentgenographic records. These should all be reproduced in lantern slides, and in other respects, case reports should meet the following minimum requirements:

1. *Title.*—Case indication by number or name, sex, age and race.
2. *Diagnosis.*—The nature and extent of anomalies affecting the oral ensemble (all structures involved, including roentgenographic findings).
3. *History and General Clinical Picture.*—Nutrition, past diseases, nasopharyngeal conditions, loss of teeth, accidents, present state of health, mental development, physical development, posture, pressure habits, caries, endocrine condition, and heredity.
4. *Etiology.*—Attributed causes.
5. *Plan of Treatment.*—General plan appliances used, supplemental therapy.
6. *Progress of Case.*—Frequency of appointments, response to treatment, complications (if any), length of period necessary to establish normal anatomical and functional relationships.
7. *Secondary Treatment.*—Appliances, appointments, muscular exercises (if necessary), time of post-treatment.
8. *Results Achieved.*—Facial, oral, dental, functional, and conditions revealed by complete roentgenographic check up—growth changes noted.
9. *Observations and Conclusions.*—Remarks upon any significant features of the case, such as the correctness or incorrectness of the diagnosis and treatment and nature of final results.
10. *Post-Treatment Findings.*—Denture and facial records of case, one, two, three, four, and five years after primary treatment has been completed, if such records are possible.

Dr. A. F. Heimlich read a paper entitled "Some Thoughts on Impactions" in which he showed, with the aid of slides, his method of dealing with practically every type of impaction.

Dr. Willard Crapo reported on two interesting cases which were logically presented with the aid of lantern slides.

Biological Photographic Association

The ninth annual convention of the Biological Photographic Association will be held Sept. 14 to 16, at the Mellon Institute for Industrial Research, Pittsburgh, Pa. The program will be of interest to scientific photographers, scientists who use photography as an aid in their work, teachers in the biological fields, technical experts, and serious amateurs. It will include discussions of motion picture and still photography, photomicrography, color and monochrome films, processing, etc., all in the field of scientific illustrating. Modern equipment will be shown in the technical exhibit; the Print Salon will display the work of many of the leading biologic photographers here and abroad.

Northern Section Pacific Coast Society of Orthodontists

The final meeting of the year of the Northern Section of the Pacific Coast Society of Orthodontists was held at the Imperial Hotel, Portland, Ore., on May 22, starting with breakfast at 8:15 A.M.

The morning program consisted of two papers. Dr. Homer Rush, M.D., of Portland, Ore., gave an illustrated talk on "Endocrines and Orthodontics." Dr. A. G. Bettman, plastic surgeon, presented cases showing restoration of lost osseous structure of the dental ridges by means of transplanting a portion of the fifth costal cartilage. This paper also presented several harelip and cleft palate cases showing the method of closure in these deformities. Dr. Bettman gave suggestions concerning the time of orthodontic treatment in this type of case and indications of too rapid treatment.

The program during the afternoon session consisted of the following: Molar Band Construction by Dr. G. A. Barker, Case Report by Dr. E. A. Bishop, Case Report by Dr. Paul Lewis, Making Collodial Impression Material by Dr. D. C. MacEwan, Case Report by Dr. Phillip Meaney.

Notes of Interest

Because of illness, Dr. O. E. Busby, Dallas, Texas, has temporarily transferred his practice to Dr. Brooks Bell, Medical Arts Bldg., of Dallas. Dr. Busby hopes to return to his practice in a few months; however, in the meantime wishes to assure his friends that any patient referred to him will receive the prompt and careful attention of Dr. Bell.

Dr. Paul G. Spencer wishes to announce that Dr. O. L. Voigt is now associated with him at 1817 Austin Ave., Waco, Texas. Practice limited to Orthodontics.

Dr. P. R. Ashplant announces the association of Dr. John Dolce in the practice of orthodontics, 170 Grand Street, Newburgh, N. Y.

Dr. Cecil G. Muller announces the opening of an office in the Stephens National Bank Building, Fremont, Neb. Orthodontics exclusively.

Dr. Eda B. Schlencker announces the removal of her offices from the Gas and Electric Building to 618 Temple Building, 14 Franklin Street, Rochester, N. Y. Practice limited to orthodontics.

Dr. Willard D. Crapo announces the removal of his offices from the Taft Building to 1115 Equitable Building, Hollywood, Calif. Exclusive practice of orthodontics.

Dr. Harry C. Metz announces Dr. C. J. Sapp as his associate in the practice of orthodontics, Highland Building, Pittsburgh, Pa.

OFFICERS OF ORTHODONTIC SOCIETIES*

American Association of Orthodontists

President, William R. Murray _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Chicago, Ill.
Secretary-Treasurer, Claude R. Wood _ _ _ _ _ _ _ _ _ _ _ _ _ Knoxville, Tenn.

Central Association of Orthodontists

President, Max E. Ernst _ St. Paul, Minn.
Secretary-Treasurer, L. B. Higley _ _ _ _ _ _ _ _ _ _ _ _ _ _ Iowa City, Iowa

Great Lakes Association of Orthodontists

President, Ira A. Lehman _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Detroit, Mich.
Secretary-Treasurer, Richard E. Barnes _ _ _ _ _ _ _ _ _ _ _ _ Cleveland, Ohio

New York Society of Orthodontists

President, Franklin A. Squires _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ White Plains, N. Y.
Secretary-Treasurer, William C. Keller _ _ _ _ _ _ _ _ _ _ _ New York, N. Y.

Rocky Mountain Society of Orthodontists

President, Leonard T. Walsh _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Pueblo, Colo.
Secretary-Treasurer, George Siersma _ _ _ _ _ _ _ _ _ _ _ _ _ Denver, Colo.

Southern Society of Orthodontists

President, Sam G. Cole _ Atlanta, Ga.
Secretary-Treasurer, M. Bagley Walker _ _ _ _ _ _ _ _ _ _ _ _ Norfolk, Va.

Southwestern Society of Orthodontists

President, J. H. Weaver _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Houston, Texas
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Pacific Coast Society of Orthodontists

President, Will G. Sheffer _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ San Jose, Calif.
Secretary-Treasurer, Earl F. Lussier _ _ _ _ _ _ _ _ _ _ _ _ San Francisco, Calif.

American Board of Orthodontia

President, Harry E. Kelsey _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Baltimore, Md.
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James D. McCoy _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Los Angeles, Calif.

Foreign Societies†

British Society for the Study of Orthodontics

President, S. A. Riddett
Secretary, R. Cutler
Treasurer, H. R. Evans

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*The Journal will make changes or additions to the above list when notified by the secretary-treasurer of the various societies. In the event societies desire more complete publication of the names of officers, this will be done upon receipt of the names from the secretary-treasurer.

†The Journal will publish the names of the president and secretary-treasurer of foreign orthodontic societies if the information is sent direct to the editor, 8022 Forsythe, St. Louis. Mo., U. S. A.